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The Relationship Between Adult Attachment, Perceived Social Support, and Depression in Chinese College Students With Different Life Experiences

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THE RELATIONSHIP BETWEEN ADULT ATTACHMENT, PERCEIVED SOCIAL SUPPORT, AND DEPRESSION IN CHINESE COLLEGE STUDENTS WITH DIFFERENT LIFE EXPERIENCES

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ABSTRACT

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The population of left-behind children in China face great challenges in daily life and serious concern has been raised over their physical and psychological health. The current study examines whether childhood left-behind experiences have a long-term impact on the mental health of college students in comparison to their peers without such experiences. The current study explored if there were difference in the level of insecure attachment to a parent figure, perceived social support, and depression, between students with and without left behind experiences, as well as the impact of specific demographic variables (age at separation, duration of separation, type of parent migration, and type of left-behind caregivers). In addition the indirect effect that of perceived social support has on the relationship between insecure attachment and depression for students with and without left behind experiences. Three hundred and ninety-nine Chinese college students including 145 students with left-behind experiences were recruited to completed self-report questionnaires on left-behind experiences, attachment to parent or parent-like caregiver, perceived social support, and depression. Significant differences were found in

attachment avoidance to mother or mother-like figure between college students with left-behind experience and those without such experience, however, no significant differences were detected in terms of all the other insecure attachment dimensions, levels of perceived social support and depression in these two groups For college students with left-behind experience, ANOVA showed no significant differences regarding age at separation, duration of separation, and interaction effect of these two factors on the level of depression. Similarly, the types of parent migration, left-behind caregivers, and their interaction effect were also not significant on the level of depression. Multiple regression analyses indicated perceived social support significantly mediated the relationship between adult attachment and depression while the left-behind status did not moderate this mediating model. These findings suggest evaluating Chinese college students' attachment styles may be more important than knowing their left behind status. Results also revealed a gap in research of left-behind experience particularly missing the important variable of parenting and the need to further understand the mechanism of left-behind status on attachment avoidance to mother or mother-like figures.

Keywords: left-behind experience, adult attachment, perceived social support, depression, Chinese college students

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CHAPTER I

INTRODUCTION

The last three decades have witnessed the largest human migration from rural countries to unban cities of China in history. This migration is due to individuals seeking better paid jobs in the cities (Zhang, 2004). Due to policy restrictions and high living expense in cities, most migrant workers cannot afford to bring their children with them and they have to leave children in their rural hometowns. These children who are separated from their parents for long periods of time and taken care by grandparents, relatives, teachers, or others are referred to as "left-behind children" (LBC; Cheng & Sun, 2015).

Consequences of Left Behind Experiences

In recent years, there has been growing public concern over the living condition and mental health of LBC. These children oftentimes face a series of challenges in daily life, such as lack of parental care and supervision (Zhao, 2013), limited access to educational resources (Guang et al., 2017), academic difficulties (Zhao, Liu, & Zhang, 2013), and feelings of loneliness (Fan, He, & Chen, 2016; Jia & Tian, 2010; Zhang, 2011; Zhang, Wang, & Zhao, 2014; Zhao, Liu, & Wang, 2015). Moreover, studies using self-reported surveys as well as projective tests have demonstrated LBC are at higher risk to

develop depression compared to non-LBC (e.g., Yan & Chen, 2013). A recent systemic review indicated the lowest depression rate found among 9 studies, was 12.1% in a sample of 1,694 LBC, which was significantly higher than the depression rate in non-LBC, 8% for 1,223 non-LBC, not to mention the highest rate of depression being 51.4% in a sample of 893 LBC (Cheng & Sun, 2015).

Various studies are devoted to understanding what factors may contribute to this high prevalence rate of depression in LBC. Researchers have been particularly interested in the left-behind experiences, such as the type of parental absence (e.g., Ren & Treiman, 2016), LBC's age when they are separated from parents, and the duration of separation (e.g., Liu, Li, & Ge, 2009). A general consensus is, the younger the child is at separation and the longer the separation lasts is associated with higher levels of depression (Ling, Fu, & Zhang, 2015; Liu et al., 2009; Su, Li, Lin, Xu, & Zhu, 2012). However, there are mixed findings in terms of the impact of specific type of parental absence on mental health outcomes of LBC. For instance, some studies showed absence of both parents was associated with the highest level of psychological distress (Wang et al., 2015; Zhao et al., 2015) while Cheng and Sun (2015) argued absence of mothers instead of fathers was linked to increased depression. Guang et al. (2017) pointed out the type of parental absence did not matter as long as the separation lasted for more than two years. One

study even found no significant difference among sub-groups of LBC (i.e., mother-absence, father-absence, and both parents-absence) with regards to the level of depression (He et al., 2012).

The left-behind experiences continue to impact LBC when they grow up. Compared to college students without left-behind experiences, those with left-behind experiences are especially susceptible to various mental health condition, depression as well as anxiety (Li, Luo, Gao, & Yuan, 2009), and social anxiety (Yang, Gong, & Yang, 2016). Some studies reported a high prevalence rate of depression among college students with left-behind experiences, ranging from 44.1% to 69.3%, compared to those without such experiences, the rate was between 13.97% and 18.6% (Han et al., 2017; Yang, Li, Li, & Gong, 2008). However, very few studies have examined the risk factors for depression among college students with left-behind experiences. It remains unclear if factors such as age at separation, duration of separation, and type of parental absence, would have similar effect on depression among college students with left-behind experiences.

Attachment Style and Left Behind Children Experiences

A construct that may provide a foundation for understanding long-term effects of left-behind experiences on depression is attachment style. Attachment theory postulates disruption in early mother-child relationships may lead to psychopathology in adulthood (Bowlby, 1944). Bowlby (1969, 1982) conceptualized attachment as a behavioral system

which organizes different attachment behaviors in order to maintain proximity to mothers. The attachment behavioral system is activated oftentimes when infants sense threat of separation from mothers, and infants' behavioral exploration as well as play will not resume until the child maintains a desired degree of proximity to mothers (Ainsworth, Blehar, Waters, & Wall, 1978). This so-called "attachment-exploration balance" (Ainsworth, Bell, & Stayton, 1971) is well observed in the classic laboratory procedure, the Strange Situation (Ainsworth et al., 1978). By introducing a stranger, the Strange Situation creates conditions of separation and reunion in order to observe the infant's attachment behavior.

Based on the infant's behavior towards the caregiver during the reunion episode, the attachment relationship is classified into one of three primary groups: a "secure" group (B), which is characterized by the behavior of infants who use caregivers as secure base for exploration; and two insecure groups, one "avoidant" group (A), which is characterized by the behavior of infants who appear to show no sign of distress during separation, and avoidance when reunited with caregivers; and one "resistant" or "ambivalent" group (C), which is characterized by the behavior of infants who actively express protest and anger toward caregivers when distressed, and seek proximity while at the same time resist contact with the caregiver during reunion (Ainsworth et al., 1978). A

fourth group known as “disorganized/disoriented” (D) was later identified to describe a range of behaviors which were characterized by a lack of observable explanation (Main & Solomon, 1990).

Longitudinal evidence indicated individual difference of attachment pattern in childhood exists in adulthood (e.g., Feeney & Noller, 1990; Simpson, 1990). Hazan and Shaver (1987) argued such difference manifested in romantic relationships which in many ways resembles an attachment process, and designed a forced-choice, self-report measure that included three paragraphs, each delineating several themes to assess adult attachment in romantic relationships. This measure distinguished three attachment styles that were parallel to Ainsworth et al.’s (1978) description of infant attachment pattern, secure, avoidant, and anxious-ambivalent (Hazan & Shaver, 1987).

Since then, many style-based self-report measures of adult attachment have been developed. One important measure is the Relationship Questionnaire (RQ) developed by Bartholomew and Horowitz (1991). Similar to the approach of Hazan and Shaver (1987), Bartholomew and Horowitz (1991) further differentiated the category of avoidant style into two subgroups according to the reason of avoiding intimacy, the Dismissing-avoidant group values independence, while the Fearful-avoidant group fear being hurt. The remaining two categories were Secure and Preoccupied which were equivalent to the Secure and Anxious-Ambivalent categories proposed by Hazan and Shaver’s (1987) classification.

The Experiences in Close Relationship Inventory (ECR; Brennan, Clark, & Shaver, 1998) is one of the significant landmarks in the assessment of adult attachment. The ECR taps two underlying dimensions of adult attachment, the attachment-related avoidance and attachment-related anxiety, based on results of factor analysis of a pool of 323 non-redundant items deriving from existing self-reported measures (Brennan et al., 1998). These two dimensions can be conceptualized as regulation of a behavioral-motivation system over attachment behavior, the attachment-related avoidance represents the pattern of activating or deactivating the behavior system in face of threat while the attachment-related anxiety represents the pattern of monitoring proximity to the attachment figures regarding the use of a secure base (Crowell, Fraley, & Roisman, 2017).

These insecure patterns of attachment has been shown to be significantly associated with depression in both non-clinical (Mikulincer & Shaver, 2018; Morley & Moran, 2011) and clinical samples (Bifulco, Moran, Ball, & Bernazzani, 2002; Eng, Heimberg, Hart, Schneier, & Liebowitz, 2001). However, researchers have not reached consensus on the underlying mechanism of this relationship. Some studies found both attachment-related avoidance and attachment-related anxiety significantly linked to increased level of depression (e.g., Rosenthal, Somers, Fleming, & Walsh, 2014) while

others have proposed attachment-related anxiety predicted elevated depression through the use of hyperactivating strategies (e.g., Lopez, Mauricio, Gormley, Simko, & Berger, 2001).

Such relationships between insecure attachment and depression also exists in Chinese college students (Gu, Guo, Yuan, Du, & Wang, 2016; He, Wu, Tang, & Hu, 2015). For instance, college students who reported greater levels of attachment avoidance as well as attachment anxiety were more likely to endorse elevated depression following the instance of hassles (Yi et al., 2012). However, no study has examined this link in the population of Chinese college students with left-behind experiences.

Social Support as a Mediator

Bowlby (1973) argued that attachment influences the outcome of mental health through indirect effect of social support. Specifically, individuals with insecure attachment tend to perceive less social support available, are less satisfied with support received, and hence more susceptible to depression (Mikulincer & Shaver, 2018). This mediating role of social support was confirmed in studies of U. S. and Chinese college students from Hong Kong (Chi Kuan Mak, Bond, Simpson, & Rholes, 2010; You et al., 2015). However, such relationship has not tested in the population of mainland Chinese college students.

The assessment of social support generally falls in the category of structure versus function as well as the degree of specificity of the measured structure or function (Cohen

& Wills, 1985). Structural measures tap the size of social network or frequency of contact (Wills, Bantum, & Ainette, 2016) while functional measures tap the extent to which those social relationships provide a particular function (Cohen & Wills, 1985). Several types of support functions are identified: esteem support, informational support, social companionship, instrumental support, and emotional support (Cohen & Wills, 1985; Wills et al., 2016). There is some evidence on functional measures performing better than structural measure regarding detecting the main effect or buffering effect of social support (Cohen & Wills, 1985).

Social support appears to have significant impact on psychological well-being of LBC. Studies using structural measures of social support indicated it protected LBC from depression (He et al., 2012), feelings of loneliness (Zhang et al., 2014), and negative coping (Wei, 2015). None of the studies to date has directly assessed functional social support in relation to health outcome of LBC. Furthermore, it is necessary to explore whether social support serves as a protective factor for college students with left-behind experiences by mediating the relationship between attachment and depression, and whether this relationship is moderated by the left-behind experience. Only one study has been found which addressed the protective factor for depression in this population, and that was defined as frequent communication with parents defined as at least once per week (Li et al., 2009).

Summary

Numerous studies have documented the negative outcome of mental health among Chinese children with left-behind experience (e.g., Cheng & Sun, 2015), which may be understood by the framework of attachment theory, particularly the relationship between insecure attachment and depression, and the mediating effect of perceived social support on this relationship. However, the long-term impact of left-behind experience remains unclear.

Purpose

The purpose of the study was to investigate the risk factors for depression among Chinese college students with left-behind experiences, and the relationship among adult attachment, perceived social support and depression for Chinese college students. This exploratory study may provide information about Chinese college students with left-behind experiences, particularly their mental health, and in comparison with their peers without left-behind experiences. This study may promote understanding of the mechanism of left-behind experiences regarding its contribution to depression, which in turn assists in providing mental health services that addresses these specific concerns unique to this population. Finally, this study would help the Chinese society gain awareness of Chinese college students with left-behind experiences and eventually provide more support to them.

Research Questions

Q1 Are there significant differences between Chinese college students with left-behind experiences and those who without such experiences regarding the level of attachment anxiety to father or father-like figure, attachment avoidance to father or father-like figure, attachment anxiety to mother or mother-like figure, attachment avoidance to mother or mother-like figure, perceived social support, and depression?

Q2 Are there significant differences in the level of depression regarding the age at separation and duration of separation for Chinese college students with left-behind experiences? Is there a significant effect of interaction of age at separation and duration of separation on the level of depression?

Q3 Are there significant differences in the level of depression regarding the type of parent migration and left-behind caregivers for Chinese college students with left-behind experiences? Is there a significant effect of interaction of parent migration and left-behind caregivers on the level of depression?

Q4 Does the level of perceived social support mediate the link between attachment anxiety to father or father-like figure and the level of depression among Chinese college students? Is the variable of left-behind experiences a significant moderator for the examined mediation model in that the magnitude of the association between attachment anxiety to father or father-like figure and the level of depression for Chinese college students with left-behind experiences will be significantly greater than that of students without left-behind experiences?

Q5 Does the level of perceived social support mediate the link between attachment avoidance to father or father-like figure and the level of depression among Chinese college students? Is the variable of left-behind experiences a significant moderator for the examined mediation model in that the magnitude of the association between attachment avoidance to father or father-like figure and the level of depression for Chinese college students with left-behind experiences will be significantly greater than that of students without left-behind experiences?

Q6 Does the level of perceived social support mediate the link between attachment anxiety to mother or mother-like figure and the level of depression among Chinese college students? Is the variable of left-behind experiences a significant moderator for the examined mediation model in that the magnitude of the association between attachment anxiety to mother or mother-like figure and the level of depression for Chinese college students with left-behind experiences will be significantly greater than that of students without left-behind experiences?

Q7 Does the level of perceived social support mediate the link between attachment avoidance to mother or mother-like figure and the level of depression among Chinese college students? Is the variable of left-behind experiences a significant moderator for the examined mediation model in that the magnitude of the association between attachment avoidance to mother or mother-like figure and the level of depression for Chinese college students with left-behind experiences will be significantly greater than that of students without left-behind experiences?

Delimitations

This study will utilize convenience samples from five Chinese universities and hence generalizability of results will be limited. The use of online survey may lead to the sampling error which excludes college students without access to the computer or internet. All the concepts will be assessed by self-report measures, which is subject to the bias of participant response. In addition, results may be impacted by the translating measures to different languages.

Definition of Terms

Attachment-Related Anxiety

A dimension of adult attachment that reflects individual difference in how the behavioral-motivational system overseeing the psychological proximity and availability

of the attachment figure particularly whether the individual can use the attachment figure as a secure base to engage in exploration (Crowell et al., 2017).

Attachment-Related Avoidance

A dimension of adult attachment that reflects individual difference in how the behavioral-motivational system regulating the attachment behavior in face of threat to the attachment system, whether the individual actively seeks contact or deactivates the system (Crowell et al., 2017).

College Students with Left-Behind Experiences

College students who report being separated from one or both parents for at least six months before age 16.

Depression

Depression is characterized by persistent sadness, loss of interest or energy, feelings of guilt or worthlessness, a change in sleep or appetite, feelings of hopelessness, and poor concentration (World Health Organization, 2015).

Insecure Attachment

Considered on a continuum of secure to insecure attachment and is characterized by an individual's difficulty in proximity seeking and fear of abandonment (Ainsworth et al., 1978; Brennan et al., 1998).

Left-Behind Children

"Those children in countryside who stay at home when both of their parents or one parent migrate to urban areas for at least 6 months have been referred to as 'left-behind children' (LBC)" (Cheng & Sun, 2015, p. 515).

Perceived Social Support

Perceived availability of support from the individual's social network.

Secure Attachment

Considered on a continuum of secure to insecure attachment and is characterized by an individual's ability to be close to, and rely on the attachment figure without fear of being abandoned (Ainsworth et al., 1978; Brennan et al., 1998).

CHAPTER II

LITERATURE REVIEW

Introduction

Since China's economic reform, particularly the open-door policy in the 1980s, millions of workers have left their rural hometowns for more prosperous cities in pursuit of better paid jobs (Liang & Ma, 2004). This has led to the largest rural-to-urban migration in human history (Zhang, 2004) with 277 million people migrating by the end of 2015 (China National Bureau of Statistics, 2016). Many migrant workers cannot afford to bring along their children due to the high cost of living in cities, job insecurities, as well as institutional barriers such as the Household Registration System, or *Hukou,* that limits their access to social security, healthcare, and education for their children (Huang, Song, Tao, & Liang, 2016). As a result, over 60 million children are left at home in rural China by their migrant parents (All-China Women's Federation, 2013), with 74% left in the care of their grandparents, 12.8% left with their uncles or aunts, and 13.2% left with no relatives (Fan, Su, Gill, & Birmaher, 2010), which has attracted widespread media attention and research interest (e.g., Chen & Chan, 2016; Duan, Lu, & Zou, 2013; Wen,

Su, Li, & Lin, 2015). According to Cheng and Sun (2015), "those children in countryside who stay at home when both of their parents or one parent migrate to urban areas for at least 6 months have been referred to as 'left-behind children' (LBC)" (p. 515).

The physical absence of parents has created a trade-off for LBC, material benefits versus lack of parental supervision (Huang et al., 2016; Liu & Leung, 2017; Zhao, 2013). Mobile phone use (call, text message, and audio/visual interaction) becomes the main method of parenting among migrant workers (Liu & Leung, 2017) as many of them usually visit their children only once a year during the Spring Festival (Lu, Lin, Vikse, & Huang, 2016).

Recent studies suggested parent migration is associated with negative health outcomes among LBC (e.g., Sun et al., 2015). A survey of 269 LBC aged under 6 years from rural areas of Shandong province indicated a higher rate of emaciation (based on the criterial of weight-for-height Z score lower than -2) compared to non-LBC (Mo et al., 2015). Similar results were found among LBC aged 7 years and older (Tao, Yu, Gao, & Xue, 2016). Specifically, in a sample of 472 LBC recruited from Ningxia Autonomous Region, a higher prevalence of abnormal development (based on the criterial of height-for-age Z scores) was seen in male (4.12%) and female (5.68%) LBC compared with non-LBC male (.56%) and female (1.14%), in addition to a high rate of emaciation (13.10%; based on the Chinese BMI-for-age cutoff points) for female LBC (Tao et al., 2016). Although data from a large population-based survey of 2, 428 LBC did not yielded

significant differences in the rate of stunting (based on the criterial of height-for-age Z scores) between LBC and non-LBC, LBC cared for primarily by their fathers were at greater risk for stunting with a 32% increase of stunting compared to LBC cared for by their mothers (Ban et al., 2017).

De Brauw and Mu (2011) also reported a 6.3% increase in the probability of being underweight, which might be attributed to caregivers of LBC spending fewer hours buying, preparing, and cooking food per week than caregivers of non-LBC. Longitudinal research based on four waves of data collected from the China Health and Nutrition Survey demonstrated a significant correlation between the status of parent migration (mother-only, both-parentsZh) and pre-hypertension or hypertension (Wen & Li, 2016). Moreover, LBC have two times higher rates of non-fatal injury than non-LBC (Shen et al., 2009).

In addition to problems with physical health, a growing body of literature has also documented a wide range of psychological problems that LBC experience, such as higher prevalence of depression ranging from 12.1% to 51.4% depending on the measures used (Cheng & Sun, 2015), higher prevalence of anxiety ranging from 13.2% to 57.6% (Cheng & Sun, 2015), higher scores of social anxiety (Zhao et al., 2014), more behavioral problems (Fan et al., 2010; Ling et al., 2015), more emotional symptoms (Wang, Zhou, & Hesketh, 2017) and fewer prosocial behaviors (such as helping others; Fan et al., 2010), greater risk of being lonely (2.5 times more likely to be lonely than non-LBC; Jia & Tian,

2010), more alcohol use (10.8% for LBC, 7.8% for non-LBC; Jiang, Chu, & Li, 2015), and increased victimization experience (28% of LBC experience multiple types of violence; Chen & Chan, 2016).

Specifically, most studies suggested LBC are more susceptible to depression than non-LBC. These studies often utilize conventional sampling methods which include the following components: cluster sampling from one or several counties or areas (e.g., Chongqing, Henan, & Shaanxi) that host numerous LBC to yield a large sample size (over 1,000), use a popular measure of depression such as Children's Depression Inventory (CDI), and conduct chi-square tests to analyze between-group differences in left-behind status for various demographic characteristics (e.g., Guang et al., 2017; Guo et al., 2012; J. Guo et al., 2015; Liu, Li, Chen, & Qu, 2015). One study using the House-Tree-People test to examine the personality of LBC and non-LBC found similar result, LBC scored significantly higher in depression dimension than non-LBC did (Yan & Chen, 2013).

Researchers have identified risk factors for depression with age at separation and duration of separation receiving the most attention. Liu and colleagues (2009) noted LBC who separated from their parents before age 3 scored the highest on the depression measure followed by the age group of 3-6. Wang et al. (2015) identified an age-specific prevalence curve of depression with the age group of 10-12 reporting the fewest depressive symptoms while the age group of 7-9 and 16-17 reporting more depressive

symptoms. Moreover, Ling and colleagues (2015) found interaction effects of age and duration of separation on LBC's mental health. Particularly, for the group of LBC who separated from parents before age 6 had similar detrimental effects on somatic symptoms, anxiety, internalizing behaviors and depression, regardless the duration of separation; for the group separated after age 6, the longer the duration, the worse the psychological outcomes, specifically more somatic and depressive symptoms, thought problems, as well as aggressive and externalizing behaviors (Ling et al., 2015).

Other risk factors for depression include left-behind status (Cheng & Sun, 2015; Guang et al., 2017; Wang et al., 2015; Wu, Lu, & Kang, 2015), negative life events (Guang et al., 2017), low socioeconomic status (SES) of parents (Cheng & Sun, 2015; He et al., 2012; Liu et al., 2009; Wang et al., 2015), and negative parent-child relationship (Guang et al., 2017). Specifically, children who are currently left behind reported most depressive symptoms compared to rural natives or reunited children who were previously left-behind (Wu et al., 2015). However, researchers have not reached consensus regarding the relationship between specific types of parent absence and mental health outcomes of LBC. For example, Wang et al. (2015) argued absence of both parents was associated with the highest depression rates while a systematic review of 19 studies on the prevalence of depression among LBC revealed absence of mothers rather than fathers was related to increased depression (Cheng & Sun, 2015). Ren and Treiman (2016) found, compared to non-LBC and LBC with one parent migrating, children left behind by

both parents reported the least happiness and most depression with or without controlling variables as parents' education, household income, and children's age. However, such difference disappeared in the community fixed-effect models which "compare individuals within communities by subtracting the community mean from each observation", suggesting it may have more to do with the village or neighborhood environment (Ren & Treiman, p. 55, 2016). Guang et al. (2017) further indicated separation from one parent seemed as harmful as separation from both parents as long as it lasted for two or more years, given that the difference in depressive symptoms between LBC with absence of both parents and those with absent fathers was significant when the duration of separation was less than two years while it disappeared when the duration was more than two years.

However, there is some evidence that there are no statistically significant differences in resilience between LBC and non-LBC recruited from Yunyang County of the Three Gorges Area (X. Guo et al., 2015). Specifically, 44.90% of 1,049 LBC showed high resilience rates and 54.15% showed medium rates as measured by the Resilience and Youth Development Module, which was similar to non-LBC (50.85% of medium resilience and 48.01% of high resilience). Gender appeared to interact with resilience in that males scored higher on subscales of participation in the community and self-efficacy while females scored higher on caring peer relationships and empathy (X. Guo et al., 2015). Moreover, 203 LBC from the Hunan province reported similar levels of life and academic satisfaction as their non-LBC peers, with self-efficacy predicting greater

satisfaction, internal locus of control, and more school engagement; although mother-absent LBC tended to show the poorest health behaviors and least school engagement (Wen & Lin, 2012). Similar results were found in a study of 1,165 children in the Yulin region of Guangxi province; specifically, there was no significant difference in academic satisfaction and happiness between LBC and non-LBC despite LBC with both parents migrating demonstrated a higher degree of loneliness compared to the non-LBC and LBC with one migrating parent (Su et al., 2012). Zhao and colleagues (2013) echoed the findings of LBC reporting similar level of feelings of loneliness as non-LBC, however, they suggested the type of parent migration did not matter in regards to feelings of loneliness.

Some researchers have argued the difference in psychological and behavioral problems between LBC and non-LBC may be attributed to other factors. For instance, Fan et al. (2010) noticed the difference was not significant when taking into account children's age, parent's and caregiver's age, education, and SES. Hu, Lu, and Huang (2014) suggested such difference were reduced after controlling for parents' marital status as well as family relationship. Su and colleagues (2012) also found parent-child communication, served as the most significant parenting strategy, and played an important role in the variability of children's happiness, satisfaction, and loneliness regardless of parent migration.

Frequent parent-child communication was associated with fewer feelings of loneliness (Jia & Tian, 2010), more prosocial behavior, as well as fewer conduct problems (Yang, Zhou, Hu, Zhu, & Sun, 2014), and less alienation toward parents (Dai et al., 2017). Furthermore, weekly parent-child communication via the text message or phone calls on topics of learning experience, school life, and feelings served as a protective factor for depression (Wang et al., 2015). Also, for LBC who experienced low or median levels of stress, parent-child communication for more than 5 minutes on academic performance and children's feelings instead of life difficulties seemed to reduce depression (Guang et al., 2017). However, the effects of parental visits was more complex. Visits were associated with decreased symptoms of depression in LBC with low levels of stress, while visits increased symptoms in LBC with median level of stress (Guang et al., 2017). In addition, migrant parents' phone calls to their children predicted their perception of parent-child relationship quality; with older migrant parents having better quality of communication with their children compared to younger migrant parents (Liu & Leung, 2017).

College Students with Left-Behind Experiences

As the first generation of LBC attend college, the impact of these experiences on their lives have received limited attention. Psychologists at university counseling centers point out college students with left-behind experiences (CSLB) tend to have more negative self-evaluations with irrational beliefs, experience a great deal of stress as well

as negative emotions, and withdraw from interpersonal relationships (Yu, 2017; Zhang, 2006). This observation is supported by a number of studies using the Symptom Checklist-90 as a screening tool for psychopathology. For instance, Yang, Feng, and Cui (2014) reported 5.2% of CSLB met the criterial for psychopathology while only 1.2% of non-CSLB did; a statistically significant difference. Interpersonal sensitivity has been consistently found to be one of the top dimensions that CSLB scored significantly higher than non-CSLB (Liu, Wang et al., 2015; Liu & Wang, 2017).

Other empirical research also corroborates this perception. Compared to non-CSLB, CSLB are at higher risk for anxiety (Li et al., 2009) and social anxiety (Yang, Gong et al., 2016). CSLB appear to experience less social support (Hu, 2016; Wen & Zeng, 2012; Xie, 2017; Xie & Wan, 2016), have more negative life events (Han et al., 2017), lower self-esteem (Han et al., 2017; Li et al., 2009), and less subjective well-being (Luo & Zhou, 2017; Zhao, Zhang, Zeng, Shan, & Ding, 2013; Zhou, Huang, Liu, & Wu, 2014).

As in the case of LBC, CSLB tend to be more vulnerable to depression compared to their peers without left-behind experiences (Li et al., 2009; Li et al., 2010). Using the Self-Rating Depression Scale, Yang, Liang, Li, and Gong (2008) noted that 44.1% of CSLB had elevated depression ratings, while only 13.97% of the normative sample had such an elevated rate of depression. Han et al. (2017) documented an even higher rate of depression among CSLB, 69.3%, with 18.6% for non-CSLB. Gan, Yang, and Zhang

(2017) suggested 37.8% of CSLB in their sample reported suicide ideation compared to 24.2% of non-CSLB did. Another study with large sample size (2,096 CSLB) observed a much lower rate of suicide ideation, particularly 6.8% for CSLB and 5.5% for non-CSLB (Liu & Wang, 2017). However, what risk factors, specifically what type of left-behind experiences, may contribute to the risk for depression among CSLB remains unclear. One study suggests longer duration of separation is associated with greater psychopathological symptoms in general (Shi et al., 2016). Another study points out the significant relationship between duration of separation and number of as well as the level of severity of depressive symptoms, the longer the duration, the more symptoms of depression and more severe level of depression (Li et al., 2009; Yang, Liang et al., 2008). More research is needed to determine whether those risk factors identified in LBC, such as age at separation, duration of separation, and type of parental absence, would have similar effect on depression among CSLB.

Attachment

Attachment theory may provide a framework to understand the link between certain life experience and psychological distress such as depression. The focus on capturing the parent-child relationship in terms of meeting basic psychological needs is particularly useful to explain the potential impact on psychological well-being in the context of left-behind situation.

Overview of Attachment Theory

John Bowlby is the founder of attachment theory. Based on his work with maladjusted boys, he drew the conclusion that disruption in early mother-child relationships may result in psychopathology in adulthood, which could not fully be explained by traditional drive theories (Bowlby, 1944). Therefore, Bowlby developed the attachment theory through utilizing knowledge of different fields, such as evolutionary biology, ethology, developmental psychology, cognitive science, and control systems theory (Cassidy, 2017). He believed that attachment behavior is the outcome of evolutionary pressures which keep infants from being killed by predators by staying close to their caregivers, usually mothers (Bowlby, 1988). Adopting the concept of behavioral system from ethology, Bowlby (1969, 1982) proposed the attachment behavioral system that organizes different attachment behaviors to achieve the central goal of maintaining proximity to mothers; it operates in a "goal-corrected" fashion with regard to infants' capability of adjusting their own behavior according to changes in mothers' location and behavior. Drawing on the control systems theory, Bowlby (1969, 1982) used the metaphor of thermostat to describe the mechanism of the attachment behavioral system. Specifically, when infants sense the threat of separating from mothers, the attachment behavioral system is activated in order to maintain proximity to mothers as the heater

being turned on when the room becomes too cold; he later added that the system does not operate necessarily in an "all-or-nothing" manner, and instead, it is continually activated with varies degrees of activation.

This variation in activation depends on conditions of child (e.g., illness, hunger) and conditions of the environment (e.g., the mother's location and behavior; Cassidy, 2017). The deactivation of the system usually results from presence of a terminating stimulus whether it is contact with mother or soothing voice of mother; again, the nature of the terminating stimulus is contingent on the degree of activation (Bowlby, 1969, 1982). Emotion also plays an important role in the attachment behavioral system. Children are motivated to maintain attachment which increases their chances of survival when they are rewarded with positive emotions via attachment behavior while punished by negative emotions due to loss of attachment (Cassidy, 2017). Bowlby (1973) pointed out emotion serves as regulatory mechanism in that it alerts caregivers to the attachment need of children.

Other behavioral systems, such as the exploratory system, fear system and caregiving system, have crucial implications for understanding the attachment behavioral system (Cassidy, 2017). Ainsworth and colleagues (1971) described the interplay of the attachment system with exploratory system as "attachment-exploration balance". The main goal of infants is to use the attachment figure as "a secure base from which to explore" (Ainsworth, 1963). Infants carefully assess the characteristics of environment as

well as availability of the attachment figure before they can further explore the environment; once they sense any threat in the environment or potential separation from the attachment figure, the attachment system is activated, and the behavior of exploration and play is reduced (Ainsworth et al., 1978). These mutually inhibiting systems usually reach an equilibrium in terms of activation and deactivation while infants respond to a specific situation (Cassidy, 2017). The fear system is also related to the attachment system. According to Bowlby (1973), the primary function of the fear system is protection as well. The fear system assists in discerning the "natural clues to danger," and once activated, it augments the likelihood of seeking protection from the attachment figure, which in turn enhances the chance of survival (Bowlby, 1973).

Cassidy (2017) proposed that the caregiving system organizes a set of parenting behavior which centers on promoting proximity and comfort as a way of responding to children who are in danger or distress. Similar to other behavioral systems, the caregiving system is activated by both internal (e.g., hormones, cultural beliefs, parental state) and external (e.g., state of the environment, state and behavior of the infant) cues (Cassidy, 2017). In general, parents and children collaborate to maintain a desired degree of proximity, the major function of the caregiving system (Cassidy, 2017). Bowlby (1969, 1982) believed the caregiving and attachment systems work in a complementary manner, meaning the child's attachment system can be relatively deactivated when the caregiving system is activated; parents take more responsibilities to maintain proximity. In fact,

infants can focus more on the exploration and play while mothers monitor the infant-mother proximity, which explains why mothers' leaving is the most distressful situation for infants (Cassidy, 2017). This notion of secure base is supported by empirical studies utilizing laboratory procedure. For example, Sorce and Emde (1981) found a decrease in infant's exploration when mothers were distracted by a magazine.

However, parents and children do not always reach consensus on the desired degree of proximity (Cassidy, 2017). Mismatch occurs when parents display proximity seeking behavior as the caregiving system is activated while children prefer to move away because of activated exploration system. Different priorities also influence the degree of synchronization of these two behavioral systems. For instance, when the attachment system is activated, all the child wants is for the mother to respond; however, the mother may have to attend to other pressing issues, such as preparing food or providing care for another child (Cassidy, 2017).

In addition to the attachment behavioral system, Bowlby described an affectional tie which he referred to as attachment bond. Ainsworth (1989) pointed out the attachment bond is characteristic of individuals rather than dyadic in nature, in other words, it is a bond that one individual develops for another individual who does not necessarily feel the same attachment. In order to differentiate the attachment bond from other types of affectional tie, Ainsworth (1989) listed the criteria for the attachment bond, including it is long-lasting instead of temporary, it involves a figure that is not replaceable, it is

emotionally laden and important for the individual, the individual wishes to maintain proximity to the person, involuntary separation will result in distress, and the most important one is the distressed individual will search for security and comfort from that person. The last criterion is what Bowlby (1969, 1982) referred to "parental bonds" to children and "child attachment" to parents.

The attachment bond is considered persistent and independent from the presence or absence of the attachment behavior (Cassidy, 2017). During the phase of exploration and play, the attachment behavioral system is not activated, it does not indicate absence of the attachment bond. Bowlby (1969, 1982) emphasized its nature of consistence by pointing out even absence of attachment behavior during long separation does not suggest the attachment bond is not there. In addition, the "strength" of attachment behavior does not equate to the "strength" of attachment bond (Cassidy, 2017). Ainsworth (1982) believed it is inappropriate to use the "strength" to reflect characteristics of the attachment bond, and instead, it may be more accurate to adopt Hinde's (1979) concept of "penetration," which demonstrates the degree to which one person penetrates many aspects of the other person's life. Ainsworth (1982) recommended to conceptualize the attachment bond under this framework, for instance, when children grow up, parent-child relationships penetrate fewer aspects of children's life while it is not necessarily their relationship becomes weaker.

Attachment Across the Lifespan

The field of adult attachment has emphasized individual differences in the organization of attachment behavior and cognitions rather than the development of the attachment system (Crowell et al., 2017). It originates from the work of Ainsworth and colleagues (1978) on the classification of infant attachment pattern, security-insecurity. According to Ainsworth et al. (1978), attachment security refers to "the state of being secure or untroubled about the availability of the attachment figure" (Solomon & George, 2017, p. 366). As mentioned above, the infant is expected to seek proximity to the attachment figure when the attachment system is activated and will not return to exploration until the goal of maintaining contact with the attachment figure is reached (Solomon & George, 2017). Ainsworth et al. (1978) argued the infant may perceive the attachment figure to be inaccessible or unresponsive during the process of shifting between attachment and exploration. This deviation from basic pattern of attachment is measured by the classic laboratory procedure, the Strange Situation, observation of infants' attachment behavior under conditions of separation from and reunion with the caregiver through the introduction of a stranger.

Based on the infant's behavior towards the caregiver during the reunion episode (particularly the four dimensions, proximity and contact seeking, contact maintaining, avoidance, and resistance to contact and interaction), the attachment relationship is classified into one of three primary groups: a "secure" group (B), which is characterized

by the behavior of infants who use caregivers as secure base for exploration, specifically, they show signs of missing their caregivers during separation, actively seek contact with caregivers when distressed and return to exploration after being comforted; two insecure groups, one "avoidant" group (A), which is characterized by the behavior of infants who exhibit little affect or secure base behavior, little visibly distress during separation, and avoidance when reunite with caregivers; and one "resistant" or "ambivalent" group (C), which is characterized by the behavior of infants who fail to explore or play, actively express protest and anger toward caregivers when distressed and seek proximity while at the same time resist contact with the caregiver during reunion (Ainsworth et al., 1978). However, Main and Solomon (1986) found approximately 15% of attachment relationships in normative samples or higher percentage in high-risk samples cannot be classified with the ABC criteria. A fourth group known as "disorganized/disoriented" (D) is included in the classification to describe a range of behavior which is characterized by a lack of observable explanation, such as momentary disruption or breakdown of a sequence of behavior that represents the attachment group, or visible signs of fear and confusion (Main & Solomon, 1990).

These individual differences in attachment patterns appear to result from different experiences with an attachment figure (Ainsworth et al., 1978; Luijk et al., 2011; Roisman, Booth-LaForce, Belsky, Burt, & Groh, 2013; Roisman & Fraley, 2008). The secure pattern develops from interactions with an attachment figure who provides

protection, support, and comfort when the infant is stressed, while the insecure pattern develops from interactions with an attachment figure who is inconsistent, unresponsive, and rejects the infant. In order to cope with the anxiety about availability of an attachment figure, the infant with secure attachment pattern tends to adopt strategies that decrease psychological or physical distance from the attachment figure, which potentially jeopardizes exploratory behavior and direct contact seeking (Main, 1990).

Longitudinal studies have provided evidence of continuity in attachment patterns from infancy to adulthood (e.g., Feeney & Noller, 1990; Simpson, 1990), which is explained largely in terms of the persistence of working models. Bowlby (1973, 1982) used the term working models to describe mental representations of the functioning and significance of close relationships that generalize early experiences to other interpersonal relationships in adulthood. “These representations consist of a person’s beliefs and expectations about how attachment relationships operate and what he or she gains from them.” (Crowell et al., 2017, p. 600). Once formed, they serve the function to interpret and predict the behaviors of significant others and to guide subsequent social behavior (Collins & Read, 1990). They are thought to be relatively stable with automatic operation (Bretherton, 1985) although revision is possible as new attachment-related experiences can be added during development (Booth-LaForce et al., 2014).

Moreover, Hazan, and Shaver (1987) argued that romantic love can be conceptualize as an attachment process given similarities between infant-caregiver

relationships and romantic relationship, for instance, both involving caressing and "baby talk." Based on Ainsworth et al.'s (1978) descriptions of infant attachment pattern, Hazan and Shaver (1987) developed a forced-choice, self-report measure of adult attachment that consisted of three paragraphs each describing a number of themes to assess each adult attachment style in terms of feelings and behavior in romantic relationships. Participants were asked to select the description that was most applicable to them. Results revealed a parallel of infant attachment style to the one of adults: secure, avoidant, and anxious-ambivalent. Specifically, these three groups differed in love experiences. For instance, secure individuals viewed their relationships as happy, friendly, and trusting, as a result, they were more likely to have longer and more stable relationships; whereas insecure individuals tended to have more negative beliefs about their relationships and experienced emotional highs and lows: individuals with the avoidant style endorsed fear of intimacy, and individuals with the anxious-ambivalent style endorsed feelings of obsession and jealousy. Also, insecure individuals reported memories of negative experiences with parents in childhood, particularly avoidant individuals perceived their mothers as cold and rejecting, anxious-ambivalent individuals reported conflict with their parents (Hazan & Shaver, 1987).

Many studies using self-report to measure attachment style confirm Hazan and Shaver's (1987) prediction that these three groups of people are distinguished from each other (e.g., Collins & Read, 1990). However, this forced-choice measure has limited

reliability and face validity (Feeney, Noller, & Hanrahan, 1994). Bartholomew (1990) challenged the three-category conceptualization of individual differences in adult attachment by pointing out sub-groups exist in the avoidant pattern. Integrating Bowlby's working models of attachment, the three-category scheme was further divided into four classifications by dichotomizing the model of self as positive or negative and the model of others as positive or negative: Secure (positive models of self and others); Preoccupied (negative models of self and positive models of others, equivalent to Hazan and Shaver's (1987) anxious/ambivalent category); and Dismissing (positive models of self and negative models of others); Fearful (negative models of both self and others, similar to Hazan and Shaver's avoidant category). Bartholomew (1990) differentiated two sub-groups of avoidant individuals who avoided intimacy for different reasons, dismissing individuals value independence and autonomy while fearful individuals fear being hurt by significant others.

Correspondingly, Bartholomew and Horowitz (1991) developed the Relationship Questionnaire (RQ) following a similar approach of Hazan and Shaver (1987), which consisted of brief paragraphs each describing the four attachment types. Integrating the content of Hazan and Shaver (1987) descriptions and the RQ descriptions, Griffin and Bartholomew (1994) further developed a 30-item inventory, the Relationship Styles Questionnaire (RSQ), which can yield a composite score on each of the four types or an index score on each of the two dimensions (Model of Self and Model of Other).

According to Fraley and Shaver (1997), “these subscales have exhibited test-retest reliabilities above .65 over a 3-week period and have yielded validity coefficients ranging from .2 to .5 in the prediction of relationship quality, emotional experience, and relationship dynamics.” (p. 1082)

Although researchers have reached consensus by the mid-1990s that Bartholomew’s model better captures individual difference in attachment process than Hazan and Shaver’s model, the “type versus dimensions” question has raised concern over whether individuals differ continuously or categorically in terms of attachment (Crowell et al., 2017). Baldwin and Fehr (1995) suggested the classification system was not quite stable given the test-retest stability of those categorical measures was only .70, which could be attributed to classifying individuals to categories who might be near the boundaries of categories. Furthermore, the classification system treated the categories as mutually exclusive, however, data from continuous measures
indicated that was not the case (Crowell et al., 2017). In addition, the classification system overlooked the within-group variance which can potentially benefit outcome prediction.

To uncover the fundamental dimensions underlying adult attachment, Brennan and colleagues (1998) conducted a thorough examination of the literature on self-reported measures of attachment to yield a pool of 323 non-redundant items covering 60 attachment-related constructs that was administered to 1086 undergraduates. Two factors,

labeled attachment-related avoidance and attachment-related anxiety, emerged in the principal components analysis, and accounted for 62.8% of the variance. Crowell and colleagues (2017) "suggested that the dimensions be interpreted within the framework of behavioral-motivational systems rather than models of self-other per se" (p. 615). The individual differences in attachment-related anxiety are reflected by how the behavioral-motivational system overseeing the psychological proximity and availability of the attachment figure particularly whether the individual can use the attachment figure as a secure base to engage in exploration. The individual differences in attachment-related avoidance are reflected by how the behavioral-motivational system regulating the attachment behavior in face of threat to the attachment system, whether the individual actively seeks contact or deactivates the system (Crowell et al., 2017).

Brennan and colleagues (1998) thus developed the questionnaire, the Experiences in Close Relationships Inventory (ECR), a 36-item self-report measure with two 18-item scales constructed from 36 items that were highly associated with either of the two higher-order factors, avoidance and anxiety. The Avoidance scale was highly related to those scales assessing avoidance and discomfort with closeness. A sample item was "I get uncomfortable when a romantic partner wants to be very close." The Anxiety scale was highly related to those scales assessing anxiety, preoccupation with attachment, jealousy, and fear of rejection. A sample item was "I worry about being abandoned." The ECR showed good stability as the Cronbach alpha was .94 for the Avoidance scale and .91 for

the Anxiety scale based on their sample. Furthermore, cluster analysis was used to classify participants, which revealed four distinct groups with patterns of scores that were similar to Bartholomew's categories. Participants in the "secure" cluster appeared low on both Avoidance and Anxiety, those in the "fearful" cluster appeared high on both dimensions; those in the "preoccupied" cluster scored low on Avoidance and high on Anxiety, and those in the "dismissing" cluster scored high on Avoidance and low on Anxiety. More individuals were classified as insecure and fewer individuals were secure according to this measure compared with Bartholomew's measure, indicating the ECR was more conservative (Brennan et al., 1998).

"The ECR and its derivatives (e.g., the revised ECR [ECR-R]; Fraley, Waller, & Brennan, 2000) are currently the most commonly used self-report measures of adult attachment and are recommended as the primary self-report instruments for assessing adult attachment" (Crowell et al., 2017, p. 615). The ECR-R is constructed using an item response theory based on the original item pool in the study of Brennan and colleagues (Fraley et al., 2000). A shorter version using 12 items of ECR named ECR-S is also created (Wei, Russell, Mallinckrodt, & Vogel, 2007). Both measures have good psychometric properties (Crowell et al., 2017).

The ECR and its derivatives have been translated to many different languages, such as Mandarin (Jin & Tang, 2007; Li & Kato, 2006), French (Favez, Tissot, Ghisletta, Golay, & Cairo Notari, 2016), German (Neumann, 2017), Italian (Busonera, San Martini,

Zavattini, & Santona, 2014), Japanese (Nakao & Kato, 2004), and Spanish (Alonso-Arbiol, Balluerka, & Shaver, 2007). Validation of the Chinese version of ECR confirmed the factor structure and cross-culture consistency (Li & Kato, 2006). The Cronbach alpha for the Avoidance scale was .82 and for the Anxiety scale was .77 based on a sample of 231 Chinese college students who had experiences in romantic relationships. The four-week test-retest reliability was acceptable, the reliability coefficient for the Avoidance scale was .71 and for the Anxiety scale was .72 based on a sample of 59 Chinese college students. The evidence regarding relationships with conceptually related constructs was partly obtained by the ECR's association with the RQ. Participants who classified as secure or dismissing by the RQ scored low on Anxiety, and those who classified as preoccupied or fearful scored high on Anxiety; participants who classified as secure or preoccupied scored low on Avoidance, and those who classified as dismissing or fearful scored high on Avoidance. The evidence regarding relationships with criteria was obtained by the ECR's association with the State and Trait Anxiety Inventory (STAI) as well as the Social Avoidance and Distress Scale (SAD). The individual's score on Anxiety was significantly related to the scores on both the State and Trait Anxiety; the score on Avoidance was significantly related to the one on social avoidance (Li & Kato, 2006).

Most studies using the ECR to assess attachment of Chinese college students indicate secure attachment (approximately 40%-50%) is the most common type, followed

by the preoccupied and dismissing attachment styles (the percentage varies depending on the sample), and the fearful attachment style (less than 10%) is the least common (e.g., T. G. Li et al., 2008; Xie & Yang, 2015). This pattern is consistent with those obtained from Western samples. A recent meta-analysis noted a slight increase in the score of attachment anxiety as well as a slight decrease in the quality of attachment from 2003 to 2015 among Chinese college students, which might be attributed to the deterioration of social environment, particularly the increase in divorce rate; female students scored higher than male students in both attachment anxiety and attachment avoidance although the effect size was quite small (Shu et al., 2017).

Depression

Epidemiological studies found a prevalence rate of depression ranging from 3.7% to 14.8% among Chinese young adults (Shi et al., 2005; Xu et al., 2006). As a common mental disorder, depression is characterized by persistent sadness, loss of interest or energy, feelings of guilt or worthlessness, a change in sleep or appetite, feelings of hopelessness, and poor concentration (World Health Organization, 2015).

Table 1 listed some commonly used self-reported measures of depression. Many of these measures assess both somatic and psychological symptoms of depression. The BDI-II, CES-D, PHQ-9, and SDS are oftentimes utilized to determine number of symptoms, level of severity as well as change in symptom severity, which assists in the process of diagnosis and treatment of depression. All instruments except the D-H S

recommend a cut-off score to detect mild depression. With the exception of the PHQ-9 which was developed based on a large sample of primary care patients (Kroenke, Spitzer, & Williams, 2001) and the BDI-II constructed from a sample of psychiatric outpatients (Beck, Steer, & Brown, 1996), the rest of the measures were developed based on non-clinical samples. Most measures have approximately 20 items except the DASS-42 and PHQ-9 which have fewer items as depression measure is one of the sub-scales. They all demonstrate very good internal consistency given that the Cronbach's alpha coefficients fall in the range of .84 and .93 based on the original samples in the development of these measures.

Table 1

Self-Report Measures of Depression

Measure	Author	Item	Reliability	Cut-off Score	Symptoms Measured
BDI-II	Beck et al., 1996	21	.92-.93	14	Criteria of DSM-IV for depressive disorder
CES-D	Radloff, 1977	20	.84-.90	16	Depressed affect, positive affect, somatic and retarded activity, and interpersonal factor
DASS-42	P. F. Lovibond & Lovibond, 1995	14	.91	10	dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia
D-H S	McGreal & Joseph, 1993	25	.93 (full scale)	n.a.	Affective, cognitive, and somatic experiences regarding depression and happiness
PHQ-9	Kroenke et al., 2001	9	.86-.89	5	Criteria of DSM-IV for depressive disorder
SDS	Zung, 1965	20	.92	50	Pervasive psychic, physiological, psychomotor, and psychological disturbance

Note. BDI-II = Beck Depression Inventory-II; CES-D = Center for Epidemiologic Studies Depression Scale; DASS-42 = Depression Anxiety Stress Scale-42; D-H S = Depression-Happiness Scale; PHQ-9 = Patient Health Questionnaire Depression Scale; SDS = Zung Self-Rating Depression Scale.

One particular issue with some of the measures is the floor effect of score distributions. For instance, the total score of BDI-II for a sample of 12,711 college students was well below the one reported by the clinical sample (de Sá Junior, de Andrade, Andrade, Gorenstein, & Wang, 2018). Moreover, a score of zero on the BDI-II represents the absence of depression, however, it does not signify the presence of happiness (McGreal & Joseph, 1993). Although the CED-S is designed to assess depressive symptoms for the general population and includes three items of positive effect (Radloff, 1977), the D-H S particularly measuring the aspect of happiness as well as depression would be better capture the individual response within the normal population (McGreal & Joseph, 1993). Considering the current study is interested in exploring the depression experience of a non-clinical sample, the use of the D-H S would be a good way to avoid the floor effect. The psychometrics of the D-H S will be discussed in details in Chapter III.

Attachment and Depression

There has been emerging evidence for the relationship between insecure attachment and mental health of Chinese adolescents (e.g., Cohen et al., 2013) and college students (e.g., Ng & Hou, 2017). For adolescents, both cross-sectional and longitudinal research recognized insecure attachment as a single risk factor for depression (Cohen et al., 2013; Ding & Wang, 2015; Li, Delvecchio, Lis, Nie, & Di Riso, 2015). One study using a relatively representative sample suggested paternal attachment instead

of maternal attachment had a stronger impact on depressive symptoms among adolescents after controlling for variables such as the family setting, gender, grade, one-child status, and parent's education level (Pan, Zhang, Liu, Ran, & Teng, 2016). However, researchers fail to differentiate between specific attachment styles or dimensions that predict negative mental health. For instance, college students who acknowledged attachment anxiety or attachment avoidance tended to show greater levels of global distress, with the attachment anxiety being significantly related to elevated scores on all symptom dimensions of the SCL-90, and the attachment avoidance too except the dimension of hostility (Li et al., 2008). Higher levels of attachment anxiety and attachment avoidance are more likely to accompany an increase in depressive symptoms at the instance of hassles, and greater levels of anxiety symptoms after controlling for baseline depressive symptoms (Yi et al., 2012). The attachment avoidance predicts higher degree of interpersonal problems related to "difficulties showing affection or feeling close to others as well as having trouble joining in with groups or socializing with others" (Wang & Scalise, 2010, p. 23).

Social Support

Researchers have consistently found the association between social support and health with both physical and psychological outcomes (Cohen & Wills, 1985; Holt-Lunsad, Smith, & Layton, 2010; Uchino, 2004). The assessment of social support focuses typically on measuring social network structure or function, and whether this measure is

specific or global in terms of "assessing a specific structure/function or combines a number of structure/functional measures into an undifferentiated global index" (Cohen & Wills, 1985, p. 315). Structural measures assess the size of social networks or frequency of interactions (Wills et al., 2016). These measures are usually single items that target the existence of one relationship (Cohen & Wills, 1985), or combination of several items that assess the existence of various social connections (Wills et al., 2016). Functional measures, on the other hand, directly assess the degree to which these relationships may provide particular functions (Cohen & Wills, 1985).

Four types of support functions are considered: esteem support, informational support, social companionship (also called diffuse support and belongingness), and instrumental support. Esteem support conveys information that the individual is valued or accepted despite personal faults and hence enhances self-esteem (Cohen & Wills, 1985). Informational support provides assistance in defining, understanding and coping with stressful events. Social companionship promotes quality time with others which fulfills a need of connection, distracts individuals from worrying, or facilitate positive affect as a way of reducing stress. Instrumental support offers needed resources to directly resolve the problem. Some researchers add one more function, emotional support, which emphasizes the availability of individuals who can be confide in as well as providing understanding and reassurance (Wills, Bantum, & Ainette, 2016).

These support functions are not mutually exclusive in real life although they seem to be conceptually independent from each other. For instance, individuals with more social companionship tend to access more esteem support and instrumental support. Due to its nature, esteem and informational support is probably responsive to a variety of stressful events while social companionship and instrumental support is likely to work under the condition when the resources provided match the demand of stressful events (Cohen & Wills, 1985).

Structural measures of social support, particularly those tapping the size of social network are less likely to detect the main effect or buffering effect of social support in relation to health outcome (Cohen & Wills, 1985). In fact, the correlation between the number of social connections and functional support is quite low, between .20 and .30 (Cohen et al., 1982; Sarason, Levine, Basham, & Sarason, 1983), suggesting sufficient support may derive from one good relationship (Cohen & Wills, 1985). Functional measures assessing specific support function tend to be more successful with regards to demonstrating the buffering effect particularly when the support function matches the stressful events being studied (Cohen & Wills, 1985). In addition, the meta-analysis indicated perceived social support rather than received support has stronger association with health outcomes, such as depression (Yang, Zhang, Liang, & Hu, 2016).

Table 2 provides a summary of a few perceived social support measures. Most of the measures were developed using a sample of college students, with the exception of

the MOS that was designed based on a sample of patients with chronic condition (Sherbourne & Stewart, 1991), and the PSSQ that was designed based on a sample of pregnant women (Omer, Elizur, Barnea, Friedlander, & Palti, 1986). The psychometrics of these measure vary, some of them have too many items, such as the ISEL, PSSQ, and the SPS; the internal consistency is good for most measures as the Cronbach's alpha coefficient ranging from .80 to .90 except for the ISEL and SPS. The SSQ-SF not only measures the size of social network but also ask individuals to rate their satisfaction with perceived support (Sarason, Sarason, Shearin, & Pierce, 1987). Similarly, the MSPSS assesses the satisfaction with perceived support from three source, friends, family, and significant other, instead of measuring the specific support function (Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS has several strengths. It is relatively short; it has good psychometrics; it has been validated in Chinese population (Chou, 2000); and it is widely used in social science research. The current study will utilize the MSPSS and the psychometrics will be discussed in details in Chapter III.

Table 2

Perceived Social Support Measures

Measure	Author	Items	Reliability	Functions
ISEL	Cohen & Hoberman, 1983	48	.60-.77	Esteem, informational, instrumental support and social companionship
MOS	Sherbourne & Stewart, 1991	19	.91-.97	Emotional, informational, instrumental support
MSPSS	Zimet et al., 1988	12	.88 (full scale)	Satisfaction with emotional support
PSS	Procidano & Heller, 1983	20/20	.88 (Frnd) .90 (Fam)	Emotional and informational support
PSSQ	Omer et al., 1986	28	.82 (Hund)	Emotional and informational support
SPS	Cutrona & Russell, 1987	24	.65-.76	Esteem, emotional, informational/instrumental support
SSQ-SF	Sarason et al., 1987	6/6	.90-.93	Satisfaction with esteem and emotional support

Note. ISEL = Interpersonal Support Evaluation List; MOS = Medical Outcomes Study-Social Support Survey; MSPSS = Multidimensional Scale of Perceived Support; PSS = Perceived Social Support for Family and Friends; PSSQ = Perceived Social Support Questionnaire; SPS = Social Provisions Scale; SSQ-SF = Social Support Questionnaire-Short Form.

Social Support as a Mediator

Bowlby (1973) conjectured that individuals with working models of insecure attachment possess biased perception of social relationships that confirm their fear, negative beliefs and expectations about the attachment figure, which may result in

behavior that alienates others or sabotages relationships. This seems to explain the mechanism of mediating role of perceived social support in the relationship between insecure attachment and depressive symptoms. Particularly, individuals with insecure attachment oftentimes viewed social support less available, or were less satisfied with support they receive, and less likely to cultivate mutually supportive relationships (Mikulincer & Shaver, 2018).

Research has provided some evidence on this theoretical proposition (e.g., Collins & Feeney, 2004; Gallo & Smith, 2001; Vogel & Wei, 2005). In general, insecure attachment was linked to increased depression through the effect of perceived social support for American and Chinese college students (Chi Kuan Mak et al., 2010; You et al., 2015), married couples (Simpson, Rholes, Campbell, Tran, & Wilson, 2003), and cancer patients (Rodin et al., 2007). However, previous work has documented inconsistent results regarding the indirect effect of specific dimension of insecure attachment on depression. For instance, perceived social support was found to mediate the relationship between attachment anxiety rather than attachment avoidance and depressive symptoms for cancer patients (Rodin et al., 2007). Same relationship existed for both attachment anxiety and attachment avoidance in the sample population of American and Chinese college students (Chi Kuan Mak et al., 2010; You et al., 2015). Interestingly, one study showed cultural difference in such relationship, attachment avoidance was more strongly related to perceived social support for Chinese college

students from Hong Kong than for U. S. college students (You et al., 2015). The other study did not observe this cultural difference (Chi Kuan Mak et al., 2010).

Social Support of Left Behind Children

Social support plays an important role in LBC's psychological well-being. First of all, social support from family and friends appears to protect LBC from depression (He et al., 2012). Social support influences coping styles and feelings of loneliness among LBC. For instance, a survey study with 381 LBC in Henan province suggested LBC with strong social support were more likely to adopt a positive coping style rather than a negative one (Wei, 2015). Hierarchical regression analysis on 204 LBC aged 10-17 in Henan province indicated that for father-migrating LBC, support from the left-behind caregiver and migrant father was negatively related to feelings of loneliness when controlling for age; for both parents-migrating LBC, support from the migrant caregiver negatively explained feelings of loneliness (Zhang et al., 2014). Furthermore, social support predicted the level of aggression in that objective support was negatively associated with physical aggression and hostility, and subjective support was negatively associated with all dimensions of aggression in juvenile delinquents with left-behind experiences (Zhao, Tang, & Li, 2011).

Similarly, friend companionship seems to decrease the feelings of loneliness in LBC as well as depression in children with both parents migrating (Zhao, Liu, & Wang, 2015). This protection is manifested by the moderating effect of friend companionship

which buffers the negative influence of poor father-child cohesion on feelings of loneliness (Zhao et al., 2015). Particularly for parents-migrating children, friend companionship lessens the severity of poor father-child cohesion in terms of life satisfaction (Zhao et al., 2015).

In addition, teacher and peer acceptance has been found to significantly contribute to LBC's well-being. Correlation analysis with 164 LBC in the Henan province demonstrated that LBC's loneliness was negatively related to teacher acceptance, parental attachment and peer rejection (Zhang, 2011). Multiple regression analysis suggested that teacher acceptance, father-child attachment, and peer rejection together predicted LBC's loneliness, which explained 41% of total variance (Zhang, 2011). Peer rejection measured by peer ratings was found to be positively associated with aggression, loneliness, and academic violation while peer acceptance (measured by peer ratings) was negatively associated with aggression and academic violation (Zhao, Liu, & Zhang, 2013).

Most studies mentioned above utilized the Social Support Rating Scale (SSRS) designed by Chinese scholar Xiao (1994). He assessed social support based on three aspects, objective support, subjective support, and support utility. The objective support refers to offering needed resources or direct solutions to the problems, which is equivalent to instrumental support; the subjective support refers to providing understanding and reassurance, which is equivalent to emotional support; and the support utility refers to the extent to which individuals utilize social supports (Xiao, 1994).

Although the SRSS appears to tap the function of social support, the focus is still on measuring the size of social network, meaning counting individuals who can provide such functional support (Xiao, 1994).

As studies of social support for LBC, research on social support of CSLB is still rudimentary. One study found frequent communication with parents (at least once every week) reduced depression for CSLB (Li et al., 2009). It remains unknown whether social support continues to serve a protective role in the relationship between left-behind experiences and depression among CSLB. No study has directly measured social support in relation to depression among Chinese college students, let alone exploring potential mediating effect of social support on the relationship between attachment and depression. Also, it is unclear whether this mediation model is contingent on the left-behind experience, meaning whether it is moderated by left-behind experience.

Summary

In recent years, the issue of left-behind children (LBC) in China have drawn great media and research attention. The public has shown deep concern over the poor living condition, lack of care and parental supervision, high rate of neglect and abuse, and physical as well as psychological health. One particular concern is the vulnerability to depression among LBC samples. Researchers have identified some risk factors (i.e., age at separation and duration of separation) and promotive factors (i.e., social support) for depression in LBC. However, very few studies have focused on the long-term effects of

left-behind experiences. Preliminary research suggested college students with left-behind experiences seemed to be susceptible to depression, however, it remains unclear what other characteristics of the left-behind experiences are risk factors for depression in college students. In addition, none of these studies have examined other risk factors such as insecure attachment, and its link between depression and perceived social support for Chinese college students. Thus, it is necessary to explore the mediating effect of perceived social support on the relationship between adult attachment and depression, and whether the strength of this mediating effect differs between college students with and without LB experiences.

CHAPTER III

METHODOLOGY

Purpose

The purpose of this study was to investigate the relationship among the left-behind experiences, adult attachment to a parental figure, perceived social support, and depression in a sample of Chinese college students. This study utilized survey research methods to answer the research questions.

Participants

The current study utilized a convenience sampling method to recruit Chinese college students from two universities in two regions of China, Fujian, and Shanghai. Participants were recruited by instructors of courses in psychology/mental health during class presentations. Upon obtaining the IRB approval and permission to collect data from these universities, the instructors described the study and the purpose at which time they asked for volunteers who were 18 years old and older. A link to the study was provided to students by instructors. No incentive was provided for participating in the study.

The estimated minimum sample size is determined based on Fritz and MacKinnon (2007) recommendation. In order to detect the mediation effect using bias-corrected bootstrap procedure, the minimum sample size for .80 power is 377 when the size of the indirect effect is $\alpha = .14$, $\beta = .26$.

Measures

The measures used in this study included a demographic questionnaire and four self-report measures assessing the constructs of perceived social support, adult attachment (i.e., current adult attachment to a father figure and current adult attachment to a mother figure), and depression (see Appendices D through M for demographic questionnaire and surveys given to participants). Below, I will outline characteristics of the self-report surveys.

Multidimensional Scale of Perceived Social Support

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) was utilized to assess participants on the variable of perceived social support from three specific sources, family, friends, and significant others. The MSPSS is a 12-item instrument that consists of three 4 item scales measuring perception of social support adequacy from each of these sources. Each subscale measures levels of perceived social support from a specific source (e.g., the family subscale measures greater or lesser levels of perceived social support from the family) and each participant has a level on each subscale. The items are measured using a 7-point Likert-type rating response scale of 1 =

very strongly disagree to 7 = *very strongly agree*. The measure yields three separate scores (ranging from 4 to 28) and a total score (ranging from 12 to 84) with a higher score indicating a greater level of perceived social support. In the current study, the mean of the total score was utilized to measure level of social support.

The MSPSS was designed to measure perceptions of social support adequacy from specific sources: family, friends, and significant others (Zimet et al., 1988). In developing the scale, Zimet et al. (1988) utilized a sample of 275 undergraduate students who enrolled in an introductory psychology course. Items were included based on results of repeated factor analyses which indicated items form consistent and conceptually clear factors. Example of items included on the MSPSS were as follows: "My family is willing to help me make decisions" (perceived support from the family); "I can count on my friends when things go wrong" (perceived support from friends); "There is a special person in my life who cares about my feelings" (perceived support from significant other). Zimet et al. also provided normative information for the MSPSS. For the college student sample (N = 275) with a mean age of 18.6, normative data were reported as follows: perceived support from the family (M = 5.80, SD = 1.12), perceived support from friends (M = 5.85, SD = .94), and perceived support from significant other (M = 5.74, SD = 1.25).

Zimet et al. (1988) reported reliability for the scores on the MSPSS using internal consistency procedures and test-retest procedures. To examine internal consistency, they

utilized undergraduate students ($N = 275$) with a mean age of 18.6 years. Cronbach alpha coefficients for the three scales and total scale were .87 (Family subscale), .85 (Friends), .91 (Significant Other subscale), and .88 (Total scale). To evaluate the test-retest reliability, Zimet et al. utilized a subsample ($N = 69$) from the same group of undergraduates used above. The subsample had a mean age of 18.5 years and the test-retest interval was two to three months. The test-rest reliability coefficient for this sample was .85 (Family subscale), .75 (Friends subscale), .72 (Significant Other subscale), and .85 (Total scale). These findings suggested the measure demonstrated adequate internal consistency with this sample.

Zimet et al. (1988) examined criterion-related validity evidence for scores on the MSPSS. In exploring criterion-related validity evidence, it was expected that perceived social support would be negatively associated with self-reported anxiety and depression. They compared the MSPSS with Hopkins Symptom Checklist (HSCL; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974) which measured the degree of symptoms presented in various problem areas. Results were mostly as expected: participants reporting higher levels of perceived support from all three sources as well as perceived social support as a whole scored significantly lower on depressive symptoms; only perceived support from family was inversely related to depression (Zimet et al., 1988).

In the current study, a Chinese version of MSPSS based on Chou's (2000) translation was used. Chou (2000) conducted a validation study of MSPSS using a

sample of 475 Chinese adolescents with a mean age of 17.5 (*SD* = .7). The final form of MSPSS-C was established after the process of translation and back-translation being repeated several times. Instead of the three-factor solution in the original scale (Family, Friend, and Significant Other), Chou's factor analysis yielded a two-factor solution, Family Factor and Friend Factor, which accounted for 70.3% of the total variance. Chou explained the difference in the factor structure from the original scale might be due to the difference in the samples; this study utilized a sample of Chinese adolescents for whom the significant other were more likely to be their peers while the original study which utilized a sample of college students who might have experiences in romantic relationships.

Chou (2000) examined the reliability for the scores on the MSPSS-C using internal consistency procedures. The Cronbach's alpha coefficients for scores with this sample were .89 for the total scale, .86 for the Family subscale, and .94 for the Friend subscales. These results indicated good internal consistency in measuring perceived support from the family and friend. Chou also examined the construct and concurrent validity evidence supporting use of the MSPSS-C. As expected, perceived social support measured by the MSPSS-C was found to be negatively associated with symptoms of depression and anxiety measured by the General Health Questionnaire (Goldberg & Hillier, 1979) while positively associated with size of social network and frequency of contacts measured by the Lubben Social Network Scale (Chou, 2000; Lubben, 1988).

The MSPSS-C has also been validated on adult samples. Zhou and colleagues (2015) reported psychometric properties for scores of MSPSS-C using a sample of 1,212 adult patients (M = 42.48, SD = 6.24) with methadone maintenance treatment. Factor analysis confirmed the three-factor solution, the Family, Friend, and Significant Other. The internal consistency reliability coefficient for the total scores was .92; the test-retest reliability coefficient for scores of 1,010 patients with a six-month interval was .65 (Zhou et al., 2015). The convergent validity as well as discriminant validity evidence was obtained by high item-subscale correlations. Specifically, "all of the hypothesized item-subscale correlations were higher than the correlations between the hypothesized items and other subscales" (Zhou et al., p. 185). In addition, various studies have documented good internal consistency reliability for scores of MSPSS-C using samples of college students. The Cronbach's alpha coefficient of scores ranges from .88 for a sample of 722 college students (M = 19.68, SD = 1.12; Liu, Li, Ling, & Cai, 2016) to .92 for a sample of 928 students (M = 20.19, SD = 1.29; Zhang, Zhang, Yang, & Li, 2017). In the current study, all three subscales of the MSPSS-C were used in the regression analyses and the Cronbach's alpha coefficient for the sample of this study was in the following, .91 for the total scale, .77 for the Family subscale, .90 for the Friend subscale, and .90 for significant other.

Experiences in Close Relationships-Relationship Structures Questionnaire

In the current study, the variable of adult attachment to a parent-like figure was measured using the Experiences in Close Relationships-Relationship Structures Questionnaire (ECR-RS; Fraley, Heffernan, Vicary, & Brumbaugh, 2011). The ECR-RS was designed to "assess attachment-related anxiety and avoidance in four kinds of relationships: relationship with mother, father, romantic partners, and friends" (Fraley et al., 2011, p. 616). Fraley and colleagues argued the existing measures of adult attachment do not specify to which relationship they reference, or limit the domain to romantic relationships only; these measures are usually relatively long particularly when instructing participants to provide response to the same set of items repeatedly as a way of assessing adult attachment across different relationships; and they do not account for within-person variability across different relationships. In order to address these issues, Fraley et al. developed the ECR-RS based on a modified version of ECR-R. Items were included if they had good item discrimination values but excluded if they target solely a romantic relationship or were redundant with other items. The resulting ECR-RS contained nine items selected and modified from the ECR-R that measured attachment in each of the four domains. Items were rated on a 7-point Likert-type scale ranging from 1 = *strongly disagree* to 7 = *strongly agree* with a range of summed scores from 9 to 63. Data collected from 21,838 participants in an exclusive relationship with an average age of 31.5 years (*SD* = 11.28). Exploratory factor analyses confirmed a two factor solution

(anxiety and avoidance) accounting for 69% of the variance. For the current study, scale means were utilized to correspond with Likert-type scale ratings. Higher scores on subscales indicated greater attachment-related anxiety and avoidance (insecure attachment) while lower scores indicated less attachment-related anxiety and avoidance (secure attachment). In the current study, the ECR-RS was utilized to assess the level of attachment to the participant's identified father-like figure as well as mother-like figure from childhood. Some sample items included "I don't feel comfortable opening up to this person" (attachment-related avoidance), "I talk things over with this person" (attachment-related avoidance), "I'm afraid this person may abandon me" (attachment-related anxiety), and "I worry that this person won't care about me as much as I care about him or her" (attachment-related anxiety; Fraley et al., 2011).

To provide evidence in support of the reliability and validity for the ECR-RS, Fraley et al. (2011) utilized a sample of 388 individuals in dating or marital relationships with a mean age of 22.59 (*SD* = 6.27). The Cronbach's alphas were reported for scores on each dimension and each domain assessed (mother, father, partner, and best friend). Using this sample for scores on the avoidance scale, Cronbach's alphas were .91, .92, .81, and .85 for mother, father, partner, and best friend, respectively; for scores on the anxiety scale, Cronbach's alphas were .84, .87, .83, and .83 for mother, father, partner, and best friend, respectively. These values indicated good internal consistency in assessing attachment-related avoidance and attachment-related anxiety in each domain despite the

limited number of items. In examining correlations between the ECR-RS and the ECR-R, Fraley et al. reported high correlations between the ECR-RS and ECR-R in romantic domain but not the other domains (father, mother, friend, and global). As expected, the ECR-RS romantic anxiety was strongly correlated with ECR-anxiety (r = .66), the ECR-RS romantic avoidance was highly correlated with ECR-avoidance (r = .56). Fraley et al. concluded that compared to the ECR-R which mostly captured variance related to romantic attachment, the ECR-RS was more specific in assessing other domains of attachment-related avoidance and attachment-related anxiety (e.g., attachment to mother, father, and friend). In addition, the ECR-RS measures of avoidance and anxiety associated with measures of depressive symptoms. Individuals with insecure attachment (i.e., high anxiety or avoidance) were more likely to report greater depressive symptoms (Fraley et al., 2011).

In the current study, a Chinese version of ECR-RS (Cheng, 2014; Li & Kato, 2006) was used. Five out of nine items of the ECR-RS derived from the ECR (Brennan et al., 1998). The remaining four items were translated by Cheng (2014) and modified by a faculty member from the counseling psychology program. Li and Kato (2006) conducted a validation study of ECR-RS using a sample of 231 Chinese undergraduates with a mean age of 20.3 (SD = 1.02). The final form of ECR-C was established after the process of translation and back-translation being repeated three times by three faculty members.

Li and Kato (2006) reported reliability for the scores on the ECR-C using internal consistency procedures and test-rest procedures. To examine internal consistency, Cronbach's alpha coefficients were calculated: .82 for scores on the Avoidance subscale and .77 for scores on the Anxiety subscale (Li & Kato, 2006). To evaluate the test-retest reliability, Li and Kato (2006) utilized a sample of 59 college students from the same group. The four-week test-retest reliability coefficients were .71 for scores on the Avoidance subscale and .72 for scores on the Anxiety subscale (Li & Kato, 2006). These values indicated acceptable internal consistency in accessing attachment-related avoidance and attachment-related anxiety in Chinese population. In the current study, the Cronbach's alpha coefficient for the sample was in the following, .90 for the total scale, .91 for the Attachment Anxiety to Father subscale, .88 for the Attachment Avoidance to Father subscale, .91 for the Attachment Anxiety to Mother subscale, and .88 for Attachment Avoidance to Mother subscale.

Li and Kato (2006) evaluated criterion-related validity evidence as well as construct-related validity evidence for scores on the ECR-C. In examining criterion-related validity evidence, it was expected that attachment-related avoidance would be positively associated with self-reported social avoidance as well as the partner's rating on avoidance; attachment-related anxiety would be positively associated with self-reported state and trait anxiety, social anxiety, and the partner's rating on anxiety. Li and Kato (2006) utilized 22 Chinese undergraduates dating-couples who were administered the

ECR-C, State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) which measured the trait and state anxiety, and Social Avoidance and Distress Scale (SAD; Watson & Friend, 1969) which measured social anxiety, distress and avoidance in social situations. The couples were also asked to rate on 7-poing Likert-type scale regarding the partner's avoidance and anxiety in the relationship. Results were as expected: participants reporting greater level of attachment-related avoidance scored higher on the Social Avoidance subscale of SAD, and received higher rating of avoidance from the partner; participants reporting greater level of attachment-related anxiety tended to score higher on both subscales of the STAI, and received higher rating of anxiety from the partner (Li & Kato, 2006).

Depression-Happiness Scale

For this study, the Depression-Happiness Scale (D-H S) was utilized to assess participants on variables of depression. This 25-item, self-report measure was designed to assess a mixture of affective, cognitive, and somatic experiences regarding depression and happiness (McGreal & Joseph, 1993). McGreal and Joseph (1993) argued scores of individuals without depression fall in the range of 0 to 9 on the Beck's Depression Inventory which has a possible range of score of 0 to 63. A score of zero indicates the absence of depression but not necessarily the presence of happiness. A dichotomous measure including aspects of happiness would be better to capture the individual's response within the normal population and hence avoid the floor effects (McGreal &

Joseph, 1993). The D-H S consists of a 13-item Depression subscale assessing negative thoughts, feelings, and somatic experiences and 12-item Happiness subscale assessing positive thoughts, feelings, and somatic experiences (Lewis, McCollum, & Joseph, 1999). The measure uses a 4-point Likert-type rating response scale of 0 = *never* to 3 = *often*. The ratings of items on the Happiness subscale was reverse coded and hence the measure yields a continuous score ranging from 0 to 75, higher score indicating greater feelings of depression and less feelings of happiness. Some sample items include, "I feel too tired to do anything" (Depression), and "I felt satisfied with my life" (Happiness). In the current study, the scale mean was utilized to correspond with Likert scale ratings. A Chinese version of D-H S based on Li's (2008) translation was used in the current study. Li translated the measure into Mandarin and had a bi-lingual Counseling Psychologist translate it back to English and had a third bi-lingual psychologist that translated for meaning. Any translation discrepancies were reconciled via translator consensus.

The D-H S was developed with the intent of measuring individual difference in variability in mood in a normal population at any one time (McGreal & Joseph, 1993). In developing the scale, McGreal and Joseph (1993) utilized a sample of British college students with a mean age of 20.8 (SD = 2.1). Forty items were initially selected from existing depression measures (such as the Beck's Depression Inventory) and 25 items were retained based on factor loading criterion of .5. The Cronbach's alpha coefficient of the total scale was .93 for scores of this sample (McGreal & Joseph, 1993). The test-retest

reliability coefficient over a 2-week period was .7 for scores of a sample of 54 college students (Lewis et al., 1999), and the coefficient over a 2-year period was .55 for scores of a sample of 14 college students (Lewis & Joseph, 1997). The Cronbach's alpha coefficient for the sample of current study was .91 for the total scale, .90 for the Depression subscale, and .83 for the Happiness subscale.

Many studies have provided evidence on convergent validity for scores on the D-H S. Using samples of British college students, higher scores on the D-H S were found to be significantly associated with lower scores on measures of depression, such as Beck's Depression Inventory (r = -.75), Self-Rating Depression Scale (r = -.81), and Center for Epidemiological Studies Depression Scale (r = -.85; Joseph, Lewis, & Olsen, 1996); significantly associated with higher scores on measures of well-being, for instance, the Oxford Happiness Inventory (r = .59; Joseph & Lewis, 1998), and Satisfaction with Life Scale (r = .47; Lewis & Joseph, 1995).

Research Design

This study utilized a cross-sectional, non-experimental design with convenience sampling. Data were collected via self-report surveys completed online by participants. The three measures used in this study were established in published psychological literature and were free to use and dispense by researchers. Statistical analysis was conducted in SPSS and while the primary research questions were answered via

conditional process (regression) analysis to measure moderation, additional results in the form of descriptive statistics, frequencies, and correlational coefficients was reported in Chapter IV.

Procedures

Prior to data being collected, approval to conduct this study was obtained from the Institutional Review Board (IRB; see Appendix A). Data for this study were collected via an online survey from students volunteering (based on previously discussed recruiting procedures) to answer a set of questionnaires within a survey packet. Participants were given a link to the survey hosted by the Qualtrics during the class presentations. The survey packet contained a cover letter (see Appendix B) at the beginning which introduced the study and emphasized participants' responses are confidential and anonymous, the participation was completely voluntary and participants could drop out of the study at any time. Participants were asked to provide informed consent by reading the consent form (cover letter) and subsequently participating in the study. Participation in the study implied consent. Participants were then directed to the following instruments in Mandarin: the Demographic Questionnaire (see Appendix D), Multidimensional Scale of Perceived Social Support (see Appendix F), Experience in Close Relationships-Relationship Structure (mother figure; see Appendix H), Experience in Close Relationships-Relationship Structure (father figure; see Appendix J), and Depression-Happiness Scale (see Appendix L). Participants who answered "no" to the question

regarding left-behind experiences were directed to the next instrument without having to answer questions related to left-behind experiences on the Demographic Questionnaire. Measures were presented in a counter-balanced order with each possible combination of surveys being equally distributed in order to lower the risk of an order effect. Data were collected in an anonymous manner given that no identifiable information was collected from participants. Participants were provided with a debriefing summary after completing all the items of the survey; the debriefing statement (see Appendix N) included contact information of the researcher for participants who had further questions or were interested in obtaining results of the study as well as coping strategies for depression and referral information for counseling services should any concerns arise. A confirmation page was posted to notify participants that the survey was successfully completed. It took participants approximately 15-20 minutes to complete the survey packet. Responses of multiple surveys from the same IP addresses was excluded. Data were securely stored in a password-locked laptop of the author. Data would be stored for three years after the completion of the study.

Statistical Analysis

Research questions with appropriate statistical analyses used in the current study:

Q1 Are there significant differences between Chinese college students with left-behind experiences and those who without such experiences regarding the level of attachment anxiety to father or father-like figure (as measured by Experience in Close Relationships-Relationship Structure [ECR-RS]; Fraley et al., 2011), attachment avoidance to father or father-like figure (as

measured by the ECR-RS; Fraley et al., 2011), attachment anxiety to mother or mother-like figure (as measured by the ECR-RS; Fraley et al., 2011), attachment avoidance to mother or mother-like figure (as measured by the ECR-RS; Fraley et al., 2011), perceived social support (as measured by the Multidimensional Scale of Perceived Social Support [MSPSS]; Zimet et al., 1988), and depression (as measured by Depression Happiness Scale [D H-S]; McGreal & Joseph, 1993)?

Q2 Are there significant differences in the level of depression regarding the age at separation and duration of separation (as measured by the Demographic Questionnaire) for Chinese college students with left-behind experiences? Is there a significant effect of interaction of age at separation and duration of separation on the level of depression?

Q3 Is there significant difference in the level of depression among different types of parent migration (as measured by the Demographic Questionnaire) for Chinese college students with left-behind experiences? Is there significant difference in the level of depression among different types of left-behind caregivers (as measured by the Demographic Questionnaire) for Chinese college students with left-behind experiences?

Q4 Does the level of perceived social support mediate the link between attachment anxiety to father or father-like figure and the level of depression among Chinese college students? Is the variable of left-behind experiences (as measured by the Demographic Questionnaire) a significant moderator for the examined mediation model in that the magnitude of the association between attachment anxiety to father or father-like figure and the level of depression for Chinese college students with left-behind experiences will be significantly greater than that of students without left-behind experiences?

Q5 Does the level of perceived social support mediate the link between attachment avoidance to father or father-like figure and the level of depression among Chinese college students? Is the variable of left-behind experiences a significant moderator for the examined mediation model in that the magnitude of the association between attachment avoidance to father or father-like figure and the level of depression for Chinese college students with left-behind experiences will be significantly greater than that of students without left-behind experiences?

Q6 Does the level of perceived social support mediate the link between attachment anxiety to mother or mother-like figure and the level of depression among Chinese college students? Is the variable of left-behind experiences a significant moderator for the examined mediation model in that the magnitude of the association between attachment anxiety to mother or mother-like figure and the level of depression for Chinese college students with left-behind experiences will be significantly greater than that of students without left-behind experiences?

Q7 Does the level of perceived social support mediate the link between attachment avoidance to mother or mother-like figure and the level of depression among Chinese college students? Is the variable of left-behind experiences a significant moderator for the examined mediation model in that the magnitude of the association between attachment avoidance to mother or mother-like figure and the level of depression for Chinese college students with left-behind experiences will be significantly greater than that of students without left-behind experiences?

Given the first two research question intended to compare group differences, a series of analysis of variance (ANOVA) were used. The first assumption was the dependent variable (DV) was continuous, which was met as the DV, depression, was measured by a Likert-type scale. The second assumption was that the independent variables were categorical. For the age at separation, four groups were created based on prior research as well as the distribution of current data. The first group was age 0-3, the second group was age 4-6, the third group was age 7-12, and the last group was age 13 and beyond. For the duration of separation, similar categorization was conducted with four groups being duration of 0-3, 4-6, 7-12, and 13 and beyond. The type of parent migration and left-behind caregiver were measured by the demographic questionnaire and responses fell into different categories, and hence this assumption was met. The third

assumption was observation of independence which was tested by the Durbin-Watson analysis in SPSS. This assumption was met. The fourth assumption was homogeneity of variance, which was tested by the Levene's test. This assumption was met.

Considering the rest of research hypotheses tested simple mediations as well as the moderation on the direct effect, multiple regression (conditional process) analysis was used. Preliminary analyses were conducted to test assumptions of multiple regression analysis. The first assumption was the dependent variable (DV) was continuous (Tabachnick & Fidell, 2007), which was met as the DV, depression, was measured by a Likert-type scale. The second assumption was that the independent variables were continuous or categorical (Tabachnick & Fidell, 2007). This assumption was also met since the IVs are left-behind experiences measured by demographic questionnaire (the response was either yes or no), current level of adult attachment style to parent figure and level of perceived social support were both measured by the Likert-type scale. The third assumption was observation of independence which was tested by the Durbin-Watson analysis in SPSS (Tabachnick & Fidell, 2007). This assumption was met. The fourth assumption was absence of outliers in responses, which was examined by reviewing range of scores of each variable. This assumption was met. The fifth assumption was errors in estimation of predicted variable Y, conditioned on $\hat{Y}$, were normally distributed (Hayes, 2018) which was tested by examining the histogram and P-P plot of residuals generated by SPSS (Tabachnick & Fidell, 2007).

The sixth assumption was that association for all pair of variables is linear, and the seventh assumption was the data will show homoscedasticity which was both tested by examining scatterplots in SPSS (Tabachnick & Fidell, 2007). Both assumptions were met. Homoscedasticity was met given the residual plot line was linear across the line of best fit (Tabachnick & Fidell, 2007). The final assumption was absence of multicollinearity among variables. This was tested by reviewing the correlation coefficients and conducting a variance inflation factor test (VIF). This was met since the correlation coefficients beneath .70 or a VIF score below 10 (Tabachnick & Fidell, 2007).

All statistical analyses were conducted in the SPSS and PROCESS for SPSS (Hayes, 2018). To investigate research question 1, six independent t-tests were conducted with a Bonferroni Correction to p-value significant threshold. To investigate research question 2 and 3, two two-way ANOVA were conducted respectively. To investigate research question 4, the conditional process analysis was used to test the moderated mediation model. The level of depression was entered as Y Variable, the level of attachment anxiety to father or father-like figure was entered as X Variable, the level of perceived social support was entered as Mediator M, and the left-behind status was entered as Moderator Variable W. The model number was entered as 5, the confidence intervals was 95, and the number of bootstrap samples was set as 5,000. This estimated the direct effect of attachment anxiety to father or father-like figure on depression, as

well as the conditional indirect effect of attachment anxiety to father or father-like figure on depression through perceived social support (mediation model); and the effect of attachment anxiety to father or father-like figure on perceived social support being moderated by left-behind experiences (moderation). The 5,000 samples percentile bootstrap procedure was used to generate 95% bootstrap confidence intervals for the conditional indirect effects. To investigate research question 5, 6 and 7, similar procedure was conducted. The rest of the model remained the same except the X Variable being the level of attachment avoidance to father or father-like figure, the level of attachment anxiety to mother or mother-like figure, and the level of attachment avoidance to mother or mother-like figure respectively.

CHAPTER IV

RESULTS

This chapter presents the results of this study. First, demographic information of the sample is described based on preliminary analyses. Research hypotheses are then tested using a series of t-tests and moderated mediation analyses.

Preliminary Analyses

Of the 535 individuals who initially participated in the study, 136 participants (25.4 percent) did not complete all the questionnaires with missing values beyond 10%. Among those who did not complete all the questionnaires, 97 participants completed 15% to 49% of all items and 39 participants completed 50-87% of items. Most individuals stopped taking the survey when completing about one third of items. Given questionnaires were randomly presented following the demographic questionnaire, it is unlikely that participants stopped responding at a particular questionnaire. There was no significant difference between participants who did not complete the survey and those who did regarding sex ($t = 1.67$, $p = .10$), age ($t = -.14$, $p = .89$), grade ($t = -1.63$, $p = .10$), parents annual income ($t = - .02$, $p = .98$), mother's education level ($t = 1.17$, $p = .25$),

parents marital status (t = 1.43, p = .16), number of siblings (t = -.36, p = .72), and relationship status (t = -.86, p = .39). Therefore, these 136 cases were excluded, resulting in a final sample size of 399.

The demographic information of this final sample is presented in the Table 3. Five participants did not report their age. The mean age of this sample was 19.95 (*SD* = 1.65; range of 17-40). Participants were predominately freshmen and sophomores in college. The annual household income ranged from less than $4,286 to $42,857. Participants reported their parents' education level varied with a range mostly from elementary school to college or university graduate (see Table 3). More than 80% of participants reported their parents were still married and the majority of participants identified as being single. One-third of participants reported being the only child and one-third having one sibling.

When it came to the left-behind status, more than one third of participants reported having left-behind experiences, most participants reported being cared for by their grandparents, and the least were cared for by their fathers (see Table 4). The mean age of the first separation was 7.69 years-old (*SD* = 4.77). The average duration of the separation was five years and 11 months (*SD* = 4.59) with a range from less than one year to 20 years.

Table 3

Demographics

		f	%
Sex	Male	161	40.4
	Female	238	59.6
Grade	Freshman	176	44.1
	Sophomore	138	34.6
	Junior	78	19.5
	Senior	7	1.8
Annual Household Income	< $4,286	77	19.3
	> $4,286 and < $8,571	103	25.8
	> $8,571 and < $14,286	84	21.1
	> $14,286 and < $42,857	111	27.8
	> $42,857	24	6.0
Father's Education	Elementary school	57	14.3
	Some middle school	68	17.0
	Middle school graduate	63	15.8
	High school graduate	71	17.8
	Grad of vocational or technical school	41	10.3
	College or university graduate	88	22.1
	Graduate degrees	11	2.7
Mother's Education	Elementary school	111	27.8
	Some middle school	47	11.8
	Middle school graduate	61	15.3
	High school graduate	54	13.5
	Grad of vocational or technical school	48	12.1
	College or university graduate	72	18.0
	Graduate degrees	6	1.5
Parent's Marital Status	Married	348	87.2
	Divorced	41	10.3
	Separated	10	2.5
Relationship Status	Single	285	71.5
	Being in a relationship	112	28.2
	Married	2	0.3

Table 3 cont.

		f	%
Number of Siblings	0	134	33.5
	1	134	33.5
	2	36	0.09
	≥ 3	28	0.07
	None report	67	0.17

Table 4

Demographics of Left-Behind Status

		f	%
Left-Behind Status	Yes	145	36.3
	No	254	63.7
Left-Behind Caregivers	Grandparents	90	62.1
	Mother	22	15.2
	Father	4	2.7
	Relatives	18	12.4
	Others	11	7.6
Age at Separation	Before or at age three	28	19.3
	After age three and before age six	29	20.0
	After age six	58	40.0
	None report	30	20.7
Duration of Separation	Less than one year	4	2.7
	1-3 years	37	25.5
	4-7 years	39	26.9
	More than 7 years	33	22.8
	None report	32	22.1
Reunited with Parents	Yes	93	64.1
	No	52	35.9

Differences Between Left-Behind and Non-Left-Behind Students

To address the first research question that compared mean differences in key variables between college students with LB experiences and those who without such experiences, six independent t-tests were conducted respectively and the effect sizes were calculated (see Table 5). A Bonferroni correction to the p-value significance threshold was used to reduce Type I error. Given six independent t-tests were conducted, the p-value significant threshold was set to .008 (.05/6). Contrary to the hypothesis, there was no significant difference in the level of perceived social support (t = -2.10, p = .04) or level of depression (t = .15, p = .88) between college students with left-behind experience and those who without such experience. Similarly, no significant difference was found with regard to the attachment to parents except for attachment avoidance to mother (t = 2.82, p < .008; see Table 5).

Table 5

Means, Standard Deviations, and Differences of Variables of Left-Behind Experiences

	LB (N=145)			N-LB (N=254)					
Variables	*M*	*Range*	*SD*	*M*	*Range*	*SD*	*t*	*p*	Cohen's *d*
M-Anxiety	2.31	1.00-7.00	1.56	2.11	1.00-7.00	1.37	1.35	.18	.14
M-Avoid.	3.51	1.00-7.00	1.47	3.10	1.00-6.83	1.23	2.82**	.005	.30
F-Anxiety	2.35	1.00-7.00	1.37	2.26	1.00-7.00	1.40	.59	.55	.06
F-Avoid.	3.96	1.00-7.00	1.28	3.70	1.00-7.00	1.34	1.92	.06	.19
Support	4.67	1.50-7.00	1.16	4.91	2.00-7.00	1.01	-2.10	.04	.22
Depression	2.29	1.32-3.60	.49	2.28	1.36-3.72	.47	.15	.88	.02

Note. M-Anxiety = Attachment Anxiety to Mother; M-Avoid. = Attachment Avoidance to Mother; F-Anxiety = Attachment Anxiety to Father; F-Avoid. = Attachment Avoidance to Father.

** $p < .00$

Pearson correlations among variables were also calculated (see Table 6). For both groups, correlations among the four attachment dimensions showed similar patterns regarding the strength and direction of correlations. For instance, for college students with left-behind experiences, attachment anxiety to mother was significantly related to attachment anxiety to father ($r = .69$, $p < .01$); for those without left-behind experiences, attachment anxiety to mother was also significantly correlated to attachment anxiety to father ($r = .61$, $p < .01$). Furthermore, the level of depression was significantly correlated to all dimensions of attachment for both groups. However, there were some notable differences. The correlation between attachment anxiety to father and the level of perceived social support in the group with left-behind experiences was stronger than the one in the group without left-behind experiences ($r = -.32$ vs. $r = -.16$). However, the difference between these two Pearson Correlation Coefficients was not statistically significant based on the Fisher's Z test, $Z = 1.62$ (computed by the FZT Computator), which was smaller than the Z critical value of 1.96. In addition, the correlation between the level of perceived social support and depression was weaker in the group with left-behind experiences than the one in the group without such experiences ($r = -.36$ vs. $r = -.53$). The difference in these two groups were statistically significant according to the Fisher's Z test, $Z = 2.03$ (greater than the Z critical value of 1.96).

Table 6

Pearson Correlation Statistics Between Independent and Dependent Variables

Variables	1	2	3	4	5	6
1. M-Attachment Anxiety	—	.28**	.69**	.18*	-.27**	.22**
2. M-Attachment Avoidance	.31**	—	.24**	.48**	-.59**	.32**
3. F-Attachment Anxiety	.61**	.21**	—	.31**	-.32**	.29**
4. F-Attachment Avoidance	.19**	.52**	.28**	—	-.56**	.36**
5. Social Support	-.26**	-.60**	-.16**	-.42**	—	-.36**
6. Depression	.15*	.37**	.17**	.42**	-.53**	—

Note. Correlations above the diagonal line are correlations of scores of college students with left-behind experiences and correlations below the diagonal line are correlations of scores of students without left-behind experiences.

* $p < .05$

** $p < .01$

Differences within Left-Behind Students

For research question 2, a two-way ANOVA was conducted by using the age at separation and duration of separation as the IV and the level of depression as the DV. Results yielded a significant main effect of age at separation on the level of depression, F (3, 145) = 3.47, $p < .05$. The main effect of duration of separation on the level of depression was not significant, F (3, 145) = 1.25, $p = .29$, the interaction effect of age at and duration of separation on the level of depression was also not significant, F (9, 145) = 1.11, $p = .36$. Given the significant main effect of age at separation on the level of depression, a post hoc analysis was conducted to compare the mean difference between each age group. Results showed no significant difference among the four groups, all p values were beyond .05 ($p = .72$ for age 0-3 vs. 4-6, $p = .74$ for age 0-3 vs. 7-12, $p = .06$

for age 0-3 vs. age 13 and beyond, $p = .58$ for age 4-6 vs. 7-12, $p = .38$ for age 4-6 vs. age 13 and beyond, and $p = .10$ for age 7-12 vs. age 13 and beyond).

For research question 3, a two-way ANOVA was conducted by using the type of parent migration and type of left-behind caregiver as the IV, and the level of depression as the DV. Results indicated no significant main effect of type of parent migration on the level of depression, F (2, 143) = 2.07, $p = .13$, no significant main effect of type of left-behind caregiver on the level of depression, F (4, 143) = 1.06, $p = .38$, and no significant interaction effect of type of parent migration and left-behind caregivers on the level of depression, F (7, 143) = .68, $p = .68$.

Moderated Mediation Analyses

The fourth hypothesis addressed the mediation effect of perceived social support on the relationship between attachment anxiety to father and the level of depression, which is moderated by the left-behind status. To examine the hypothesis, a moderated mediation analysis was conducted using the bootstrapping method (Hayes, 2018). The bootstrapping method is a method of resampling from an original sample with replacement and replicating many times to make the inference of the constructed sampling distribution; the bootstrap confidence interval is obtained by estimate the error made when using only the original sample (Wood, 2005). Results showed the indirect effect of attachment anxiety to father on the level of depression through perceived social support was significant ($B = .04$, $SE = .02$, 95% CI [.010, .072]). Specifically, attachment

anxiety to father was significantly and negatively related to the level of perceived social support (B = -.18, SE = .04, p < .01; see Figure 1). Perceived social support significantly predicted lower level of depression (B = -.19, SE = .02) while the direct effect of attachment anxiety to father on the level of depression was not significant (B = .07, SE = .06, p = .20). Therefore, perceived social support fully mediated the relationship between attachment anxiety to father and the level of depression. However, no significant difference was found regarding indirect effects of attachment anxiety to father on the level of depression based on the left-behind status (B = -.02, SE = .03, 95% CI [-.082, .045], p = .57). This moderated mediation model explained 5% of variance in the level of depression (R^2 = .05, p < .01). In general, the first hypothesis was partially supported as the mediation effect was significant while the moderation effect was not.

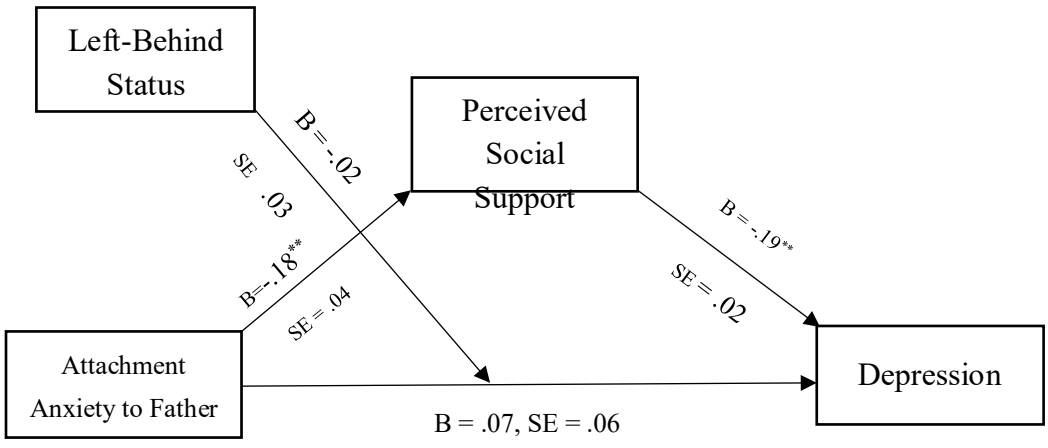

Figure 1. Moderated mediation model-attachment anxiety to father. Left behind status moderated the mediation model of attachment anxiety to father to perceived social support to depression. ** p < .01

The fifth hypothesis addressed the mediation effect of perceived social support on the relationship between attachment avoidance to father and the level of depression, which was moderated by the left-behind status. Similar analysis was conducted to test this hypothesis. The bootstrapping method indicated the indirect effect of attachment avoidance to father on the level of depression through perceived social support was significant (B = .08, SE = .02, 95% CI [.050, .120]). Particularly, the attachment avoidance to father was significantly and inversely related to the level of perceived social support (B = -.39, SE = .04, p < .01), and the level of perceived social support significantly predicted less depression (B = -.16, SE = .02, p < .01; see Figure 2), while the direct effect of the attachment avoidance to father on the level of depression was not significant (B = .02, SE = .06, p = .74). Thus, perceived social support fully mediated the association between attachment avoidance to father and the level of depression. However, no significant difference was found regarding indirect effects of attachment avoidance to father on the level of depression based on the left-behind status (B = .04, SE = .03, 95% CI [-.027, .105], p = .24). The moderated mediation model explained total of 23% of variance in the level of depression (R^2 = .23, p < .01). Again, the second hypothesis was partially supported as the mediation effect was significant while the moderation effect was not.

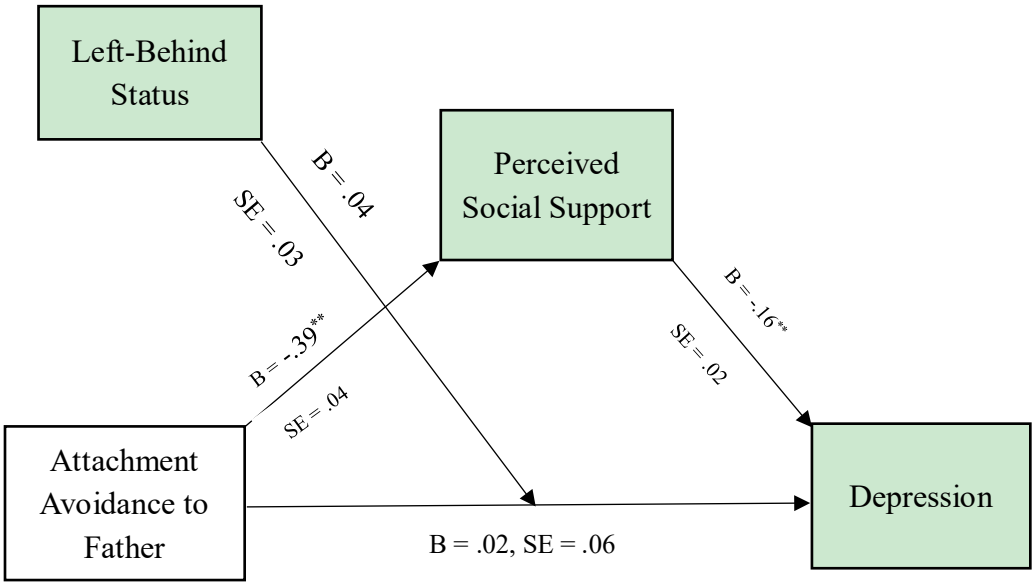

Figure 2. Moderated mediation model-attachment avoidance to father. Left behind status moderated the mediation model of attachment avoidance to father to perceived social support to depression. ** $p < .01$

The sixth hypothesis examined the mediation effect of perceived social support on the relationship between attachment anxiety to mother and the level of depression, which was moderated by the left-behind status. Again, a moderated mediation model was tested using the PROCESS for SPSS (Hayes, 2018). Analysis from the bootstrapping method with 5,000 resamples demonstrated an indirect effect of attachment anxiety to mother on the level of depression through perceived social support ($B = .02$, $SE = .02$, 95% CI [.010, .050], $p < .01$). Given that the 95% confidence interval did not include zero, this mediation effect was significant. Particularly, the attachment anxiety to mother was significantly and inversely related to the level of perceived social support ($B = -.20$, $SE = .04$, $p < .01$; see Figure 3). The level of perceived social support was negatively

associated with the level of depression (B = -.20, SE = .02, p < .01) while the direct effect of attachment anxiety to mother on the level of depression became insignificant (B = .05, SE = .05, p = .33). Therefore, perceived social support fully mediated the relationship between attachment anxiety to mother and the level of depression. However, no significant difference was found regarding indirect effects of attachment anxiety to mother on the level of depression based on the left-behind status (B = -.02, SE = .03, 95% CI [-.077, .041], p = .56). The moderated mediation model explained total of 7% of variance in the level of depression (R^2 = .07, p < .01). The third hypothesis was partially supported as the mediation effect was significant while the moderation effect was not.

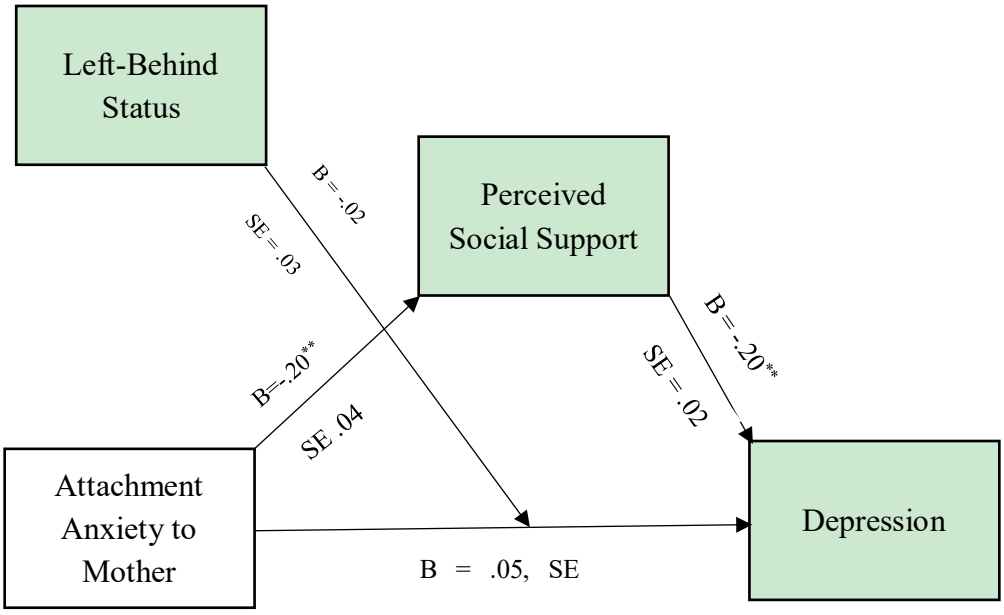

Figure 3. Moderated mediation model-attachment anxiety to mother. Left behind status moderated the mediation model of attachment anxiety to mother to perceived social support to depression. ** p < .01

The last hypothesis examined the mediation effect of perceived social support on the relationship between attachment avoidance to mother and the level of depression, which was moderated by the left-behind status. This hypothesis was tested by the moderated mediation model in the PROCESS for SPSS (Hayes, 2018). The bootstrapping method showed a significant indirect effect of attachment avoidance to mother on the level of depression through perceived social support (B = .04, SE = .02, 95% CI [.003, .081], $p < .01$). Specifically, the attachment anxiety to mother was significantly and inversely related to the level of perceived social support (B = -.48, SE = .03, $p < .01$; see Figure 4). The level of perceived social support was negatively related to the level of depression (B = -.17, SE = .02, $p < .01$) while the direct effect of attachment avoidance to mother on the level of depression was not significant (B = .0008, SE = .05, p = .99). Therefore, perceived social support fully mediated the relationship between attachment avoidance to mother and the level of depression. However, no significant difference was found regarding indirect effects of attachment avoidance to mother on the level of depression based on the left-behind status (B = .03, SE = .03, 95% CI [-.036, .092], p = .39). The moderated mediation model explained total of 36% of variance in the level of depression (R^2 = .36, $p < .01$). The last hypothesis was partially supported as the mediation effect was significant while the moderation effect was not.

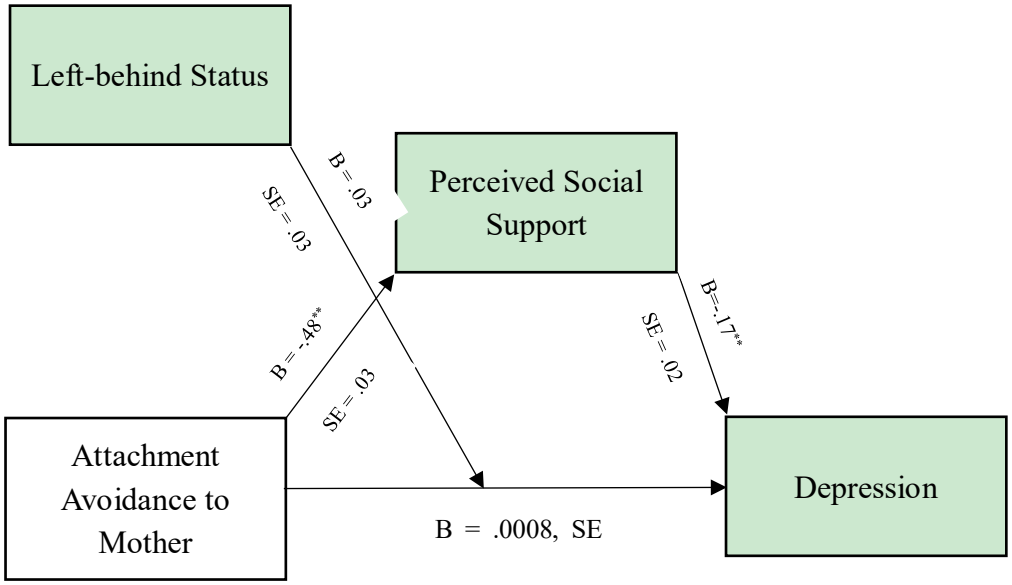

Figure 4. Moderated mediation model-attachment avoidance to mother. Left behind status moderated the mediation model of attachment avoidance to

CHAPTER V

DISCUSSION

As millions of workers migrate from rural areas to urban cities for better paying jobs, the mental health of their children left behind in the hometown has been in the spotlight. There seems to be a link between the left-behind experience and negative mental health outcome. However, very few researchers have tracked these children and explored their experiences when they attend college. Considering these college students separate from their parent(s) in childhood, it raises questions such as what the pattern of their attachment may be like, and whether it may influence their mental health compared to their peers without such experience, for instance, the level of depression. This study sought to shed some light on these questions.

Differences Between Left-Behind and Non-Left-Behind Students

The present study showed college students with LB experiences reported greater attachment avoidance to mother or mother-like figures when compared to their peers without LB experiences, however, there was no significant difference between these two groups regarding the other three attachment dimensions. This means college students with LB experiences were more likely to feel insecure about their relationship with their mother or mother-like figures.

These results may be the reflection of gender expectation in terms of parenting arrangement in China. Chinese women are traditionally treated as the main caregiver in childrearing practices while men are considered as the breadwinner whose primary focus is to provide financial support instead of being directly involve in child care. Even for migrant mothers who are physically separated from their children, they are still expected to take on more direct childcare responsibilities ranging from academic supervision to emotional support compared to migrant fathers (Peng, 2017). Left-behind or not, students probably face the similar degree of "father-absence" while growing up.

Given that mothers are supposed to be primary caregiver, mother-migration may have some unique challenges for both migrant mothers and their children. For instance, while migrant mothers are under tremendous pressure in the childrearing process, they must also keep up with heavy labor work. They are likely to bear the emotional burden of separating from their children, which makes it challenging to meet their children's needs (Peng, 2017). In fact, prior research suggests LBC with mother-migration tended to show greater alienation of affection towards their parents than non-LBC (Dai et al., 2017). It is also possible that LBC have learned to be more self-sufficient as they navigate the absence of their parent(s) compared to non-LBC.

Interestingly, there was no significant difference in attachment anxiety to mother or mother-like figure between these two groups. One possible explanation may be the increase in attachment anxiety among Chinese college students in general from 2003 to

2015 documented by a recent meta-analysis (Shu et al., 2017). This trend of decrease in attachment quality as well as increase in attachment anxiety appeared to be relate to social changes in China, especially the rise of divorce rate, Gini coefficient, and C-section rate (Shu et al., 2017).

The present study found college students with LB experience scored similarly to their peers without LB experience on a measure of depression. This result is not consistent with prior findings of significant difference in the level of depression between Chinese college students with left-behind (LB) experience and those without such experience (Han et al., 2017; Li et al., 2009; Li et al., 2010; Yang, Li et al., 2008). One possible explanation may be the difference in scales used to measure depression. The Depression-Happiness Scale (D-H S) used in present study is designed to capture a wide variability of mood in normal populations while individuals without depression can only score between 0 and 9 on the Beck's Depression Inventory with a possible range of score 0-63, which avoids the floor effect (McGreal & Joseph, 1993). The D-H S focuses less on clinical depression and targets the positive thoughts, feelings, and somatic experiences as well compared to the Center for Epidemiologic Studies Depression Scale (CES-D) that has been found to be subjected to inflated score of depression for women (Carleton et al., 2013). While an a priori power analyses suggested the study's sample size was sufficient, it is still possible that the sample was too small to detect even moderate effect.

Chinese college students in general are more susceptible to depression than the general public considering about one third of students endorsed elevated depressive symptoms according to a meta-analysis study (Jiang, Li, Chen, & Chen, 2015). Students may have undergone the transition to college and faced many challenges during the first two years of college, such as navigating the campus, dealing with interpersonal relationships, managing their own schedules as well as academic issues (Zhou & Yu, 2006). Research has indicated the significant relationship between failing in college adjustment and mental health concerns (e.g., Yao, Han, Zeng, & Guo, 2013). The sample of present study consisted of predominantly freshmen and sophomores who perhaps encountered similar challenges of adjustment, which placed them at risk for depression despite of the left-behind status.

Finally, college students with left-behind experiences may be more academically and/or emotionally successful than their LB peers who do not attend college. In fact, some LBC demonstrated relatively good subjective health status, mental well-being, great educational aspiration, and academic performance (Hu, 2017). The interview with several LBC further revealed the key to this success might be the understanding the reasons for parent migration, approximately 42% of LBC stated, “It’s for our/my education.” These children were able to recognize that their parents work hard to save money for supporting their education which is considered the most viable way to achievement in Chinese culture. Parents of LBC may have passed down the value of education through effective

parenting that oftentimes involved frequent contact with LBC to check in with them about their academic performance and ensure LBC were on the right track for higher education (Hu, 2017). Left-behind children may receive or sense more support and care from their parents in the process and feel motivated to perform well at school. Thus, these LBC are more likely to attend college or pursue higher education, which serves as a protective factor for mental health issues.

Differences Within Left-Behind Students

Contrary to the hypotheses, there were no significant differences in the level of depression regarding the age at separation, duration of separation, and the interaction effect of these two factors. Previous research on LBC has demonstrated the link between certain characteristics of left-behind experiences (e.g., separating from parents before age 3 or longer duration of separation after age 6) and elevated levels of depression (e.g., Ling et al., 2015; Liu et al., 2009). Results of present study seemed to raise the question about whether age at separation and duration of separation truly capture the essence of left-behind experience. A qualitative study that documented drastic difference in academic performance as well as mental health among a few LBC pointed out what really mattered was effective parenting (Hu, 2017). Compared with his peers who received adequate parental supervision via frequent contact with their migrant parents, a participant who was rarely monitored or cared for by his parents, reported feeling distant from his father as well as step-mother and showed more unhappiness, low motivation for

education, and being pessimistic about the future (Hu, 2017). As mentioned above, LBC showed understanding of parent migration tended to be those who were better cared by their parents and more likely to attend college, or at least more highly motivated to pursue higher education. The difference in individual experiences of LBC might suggest research focus on exploring the parenting of LBC including parental style/method, parent-child relationship, level of parental responsiveness, and parental demandingness instead of simply quantifying the left-behind experience.

The type of parent migration, left-behind caregiver as well as their interaction did not yield significant difference in the level of depression among this sample as well. This seemed to be contrary to the hypothesis that expected college students with left-behind experience like LBC in general, to showed different levels of depression based on the type of parent migration (e.g., Cheng & Sun, 2015; Wang et al., 2015). Combined with the result that the type of caregiver did not matter in terms of the level of depression, it could suggest the left-behind status itself might not be the issue, but rather the quality of such experience might define the differences. As previous research indicated the feelings of loneliness among LBC did not vary from different types of caregivers while significant difference in loneliness was detected when it came to the relationship with their caregivers (Zhao, Ling et al., 2013).

Moderated Mediation Model

All four mediation models were supported, which meant the level of perceived social support mediated the relationship between attachment anxiety/avoidance to the parent or parent-like figure and the level of depression for Chinese college students. In other words, individuals reported attachment insecurity to a parent figure perceived less social support available and hence resulted in elevated levels of depression, which was consistent with previous research (Zhu, Wang, & Chong, 2016). However, the left-behind experience did not function as a moderator in all four mediation models. There was no significant difference in the strength of these mediation models between college students with left-behind experience (CSLB) and their peers without such experience (non-CSLB). These finding were both contrary to what was predicted and also reassuring. Perhaps LB experiences in college students are not a critical factor impacting their subsequent adjustment, especially when they have a clear understanding of why their parent(s) are leaving them behind.

Study Implications

Theoretical Implications

The present study confirmed the relationship between attachment insecurity to a parental figure and the level of depression could be explained by lack of perceived social support, despite of different mechanisms of attachment anxiety and attachment avoidance. For individuals who report attachment anxiety, attachment needs are usually

met through the use of hyper-activating strategies featured by protesting to force the attachment figure to pay attention to them (Mikulincer & Shaver, 2018). Unfortunately, they are put on a partial reinforcement schedule meaning their attachment needs are met sometimes but not always. They tend to actively seek proximity in time of attachment needs while feel frustrated when the attachment figure is not responsive, which may invoke fear of abandonment and the perception of the attachment figure being less trustworthy and hence less supportive. Due to this unpredictability as well as uncertainty in terms of having their needs met, these individuals are more likely to form biased working models of themselves, others and relationships, which involve cognitive and affective scripts of interactions that serve as guidance for their future interpersonal relationships. This results in perceiving others as less trustworthy like their attachment figures and having less support available to them, which influences how individuals utilize the social support and eventually leads to the depression (Mikulincer & Shaver, 2018).

For individuals who report attachment avoidance, the goal is to deactivate the attachment system as much as possible and be self-sufficient by hiding their needs or vulnerabilities (Mikulincer & Shaver, 2018). These individuals are likely to form negative working models of others and positive working models of themselves based on their interactions with the attachment figure who disapproves or punishes them when they express the need for closeness. They tend to view the attachment figure as unavailable

like others and hence expect less support from others or believe there is sufficient support, which makes them susceptible to the depression (Mikulincer & Shaver, 2018).

Interestingly, the status of left-behind experience did not moderate the mediation model of attachment insecurity-perceived social support-depression. Based on the nature of the left-behind experience which was separation from parents at a young age, and the evidence on the link between the left-behind experience and high risk for depression in LBC, it was reasonable to expect CSLB were more likely to develop insecure attachment with their parents and hence the strength of the mediation model could be greater for them compared to non-CSLB. Although CSLB endorsed greater attachment avoidance to mother or mother-like figure compared with non-CSLB, there was no significant difference in the level of perceived social support between these two groups. This may imply that the nature rather than the strength of insecure attachment matters regarding the perception of availability and accessibility of the attachment figure. In other words, college students tend to view the attachment figure as less available and/or supportive as long as they develop some sort of insecure attachment despite of the magnitude of that insecure attachment.

Research Implications

The current study highlights a gap in the literature regarding the left-behind experience. Contrary to the hypothesis, the age at separation, duration of separation, and type of parent migration were not necessarily the risk factors of depression among a

college student sample with LB experiences as previous research on LBC has found (Cheng & Sun, 2015). This may be attributed to the resilience of CSLB or those variables are not good representations of their left-behind experience. The quality of the LB experience may be more critical than factors like one's age when parent(s) leave, or length of separation. The existing evidence is not sufficient to draw the conclusion. In fact, those variables seem to describe the quantity of left-behind experience rather than the quality of left-behind experience, which may not be the core of left-behind experience. One important variable appears to be missing and that is parenting style. Although the literature has indicated the parent-child communication serves as the protective factor for depression (Wang et al., 2015), alienation (Dai et al., 2017), feelings of loneliness (Jia & Tian, 2010), and life and academic satisfaction (Su et al., 2012), the overall picture of parenting that LBC receive remains unclear. For instance, what is the role of migrant caregiver (parents who migrate to the city) and left-behind caregiver (who take care of LBC in the hometown) in LBC's upbringing? How do these caregivers individually or as a social system influence the mental health of LBC? Future research needs to look for variables that can elucidate the process of parenting, for example, the parenting style or method, interactions between caregivers and LBC, and the quality of caregiver-child relationship. In collective societies, it is perhaps more acceptable to have others participate in the critical role of rearing a child than in Western cultures.

The present study highlights the need to further explore the impact of LB experience on attachment anxiety versus attachment avoidance among CSLB. The LB experience seems to have particularly deteriorating effect on attachment security in terms of attachment avoidance to mother or mother-like figure. However, the underlying mechanism remains unclear. Future research needs to replicate the study by using a larger and more representative sample to see if similar results are obtained. More importantly, it may be worth examining both individual and systemic factors that contribute to the strengths and challenges of CSLB in terms of developing a secure attachment to mother or mother-like figure. On the individual level, future research needs to further explore the interactions between LBC and their mothers (migrant or left-behind mothers) particularly how mothers respond to the attachment needs of LBC. On the systemic level, parameters of social environment of the LB mother-child dyad needed to be determined, for instance, financial situation, practical and emotional support of childcare, institutional restraints on childrearing, and cultural expectations about good mothering.

Practice Implications

The study indicates the importance of developing a strong therapeutic alliance as a way of providing corrective attachment when counseling Chinese college students. Given that students with insecure attachment tend to perceive less social support available and hence are likely to experience depression, it is crucial for mental health providers to form a therapeutic relationship early in the counseling process to facilitate

secure attachment bond so that students feel support or help is accessible, which increases the likelihood of students reaching out for help and in turn reduces the risk for depression.

Counseling Psychologists and other mental health providers may need to examine the attachment style of students by inquiring about their family history as well as interpersonal relationships, particularly interactions with their caregivers and important people in their lives. The primary goal is to avoid recapitulating old attachment patterns that students develop with others, and instead, to provide corrective emotional experiences to assist students in learning new ways of interacting with mental health providers and eventually other people in real life. Based on the style of attachment, mental health providers may tailor their approach to create new attachment experiences. For students with attachment anxiety, it is necessary to gradually increase therapeutic distance to help them manage their frustration while they learn to function more independently after the therapeutic alliance is built; for those who with attachment avoidance, it is vital to gradually decrease therapeutic distance to help them overcome the fear of intimacy (Daly & Mallinckrodt, 2009).

It is crucial for Counseling Psychologists and other mental health providers to remain open-minded and curious about the left-behind experience of clients. Instead of examining the status alone, clinicians may focus on exploring the quality of relationships CSLB have growing up especially the function of those relationships (whether it offers

resources/support to help clients meet their needs), and client's satisfaction with those relationships. It provides important clinical data on how clients may seek and utilize support, and how they may approach therapy. In addition, clients' own interpretations of left-behind experiences can assist clinicians in understanding client's psychological functioning, strengths and difficulties, and coping strategies. It will be important for providers not to assume that LB status is in itself pathogenic.

Limitations and Further Research

The study utilized a cross-sectional design with a convenience sample from two local universities, which limits the generalizability to broad population of Chinese college students and students with left-behind experience. The relatively small sample size might have resulted in lacking power to detect statistical significance in depression between CSLB and non-CSLB. Future research is needed to replicate the study by using a larger, more representative sample of Chinese college students to enhance the generalizability and statistical power. In addition prospective, longitudinal studies evaluating LB children and following them over time would be helpful to determine which variables help to predict successful adjustment to college, and college engagement at all.

Another factor that needs to be considered is social desirability affects when participants were completing the questionnaires. While participants were able to complete the questionnaires anonymously, it is still possible that those with LB experiences

responded in a manner that helped them "save face" relative to their non-LB peers. Future research in this area could include a measure of social desirability to help researchers control for this variable.

Finally, the measures used in current study were originally developed in English and translated into Mandarin by other researchers. Although scores of this sample seemed to show evidence of good internal consistency, the accuracy of translation as well as applicability of the concepts in Chinese cultural context deserve further examination. Zhu and the colleagues (2016) pointed out some culturally sanctioned behavior might be viewed as attachment avoidance, however, it did not necessarily mean Chinese students were afraid of intimacy or dismissed the emotional bond. For instance, Chinese culture does not encourage overt emotional expression or demonstration of a need for help, and instead, people prefer to receive help when it is offered to them rather than ask for it. This can be considered as being emotionally reserved and reluctant to seek help in the Western context of attachment avoidance. In addition, some researchers argued that the underlying mechanism of attachment avoidance for Chinese students were different from American students in that the fear of intimacy among Chinese students was due to low self-esteem to establish successful interpersonal relationships (Li & Zheng, 2014) instead of inflated self-evaluation in American students (Mikulincer & Shaver, 2018). Future research is

needed by using same translated measures with different samples to determine whether the concept of attachment avoidance is culturally appropriate or culturally adjusted attachment score is warranted.

Conclusion

This study emphasized the importance of secure attachment and its protecting effect on mental health among Chinese college students. Consistent with the attachment theory (Bowlby, 1969; Mikulincer & Shaver, 2018), students with insecure attachment were less likely to perceive social support as available or sufficient, which increased the risk for depression. Despite of disadvantages of the left-behind experiences documented in the literature, college students with this experience did not report significantly higher levels of depression compared to their peers without such experience. Future research is needed to examine the impact of left-behind experience on mental health by using variables that better capture the experience.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL

Institutional Review Board

DATE: April 15, 2019
TO: Yuge Guo, M. A.
FROM: University of Northern Colorado (UNCO) IRB
PROJECT TITLE: [1413522-1] The Relationship between Adult Attachment, Perceived Social Support and Depression in Chinese College Students with Different Life Experiences
SUBMISSION TYPE: New Project
ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS
DECISION DATE: April 15, 2019
EXPIRATION DATE: April 15, 2023

Thank you for your submission of New Project materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

Yuge -
Thank you for your extreme patience with the UNC IRB process. The protocols and materials outlined in this application are clear and thorough. Please update the UNC logo on the letterhead of the consent form and recruitment materials to the current logo used at the university. Please submit documentation of permission to collect data from the universities once you have that secured as amendments/modifications so that we have those on file at UNC. Your current application is verified/approved exempt and you may proceed with your study.

Best wishes with this meaningful and relevant research.
Sincerely,
Dr. Megan Stellino, UNC IRB Co-Chair

We will retain a copy of this correspondence within our records for a duration of 4 years.
If you have any questions, please contact Nicole Morse at 970-351-1910 or nicole.morse@unco.edu.
Please include your project title and reference number in all correspondence with this committee.

APPENDIX B

INFORMED CONSENT (MANDARIN)

UNIVERSITY of NORTHERN COLORADO

科学研究人类参与者知情同意书

北科罗拉多大学

项目名称: 不同生活经历中国大学生成人依恋，领悟社会支持与抑郁之间的关系
研究者: 郭彧戈, 硕士, 北科罗拉多大学咨询心理学系
指导教师: Brian Johnson, Ph.D., 北科罗拉多大学咨询心理学系
电话: (970)351-1645
邮件: guo9411@bears.unco.edu

这个研究的目的是为了调查中国大学生生活中的重要关系对幸福感的影响。作为一个参与者，你将会被邀请填写一份网络问卷，其中包含一个背景问卷，四个量表关于你和父母，朋友的关系，以及你的主观幸福感。大约需要15-20分钟来完成这项调查。

所有的信息都将会被保密。Qualtrics, 这个网络调查平台，将会使用加密软件对你的信息进行保密。只有上述列出的两位研究人员有权使用这些数据。参与此项研究的其中一个收获是你也许能对你与父母和朋友的关系产生新的认识。该研究的结果也会对中国大学生这个群体以及他们的经历有更好的理解，并将对如何给予他们（或者具有类似情况的你们）支持和帮助提供新思路。

你可能会感觉到些许不适，因为参与这项研究需要一定程度的自我暴露和自我反省。但是，这样的压力并不会比你在一般生活中所遭遇的更大。如果在填写问卷的过程中你感觉到严重不适，超出你的预期，请及时与上述研究者联系。我将向你提供有关咨询服务的信息，如果你需要的话。

参与是自愿的。你可以决定不参加这项研究，如果你开始回答问卷上的问题，你仍然可以在任何时候决定停止回答并退出这项调查。你的决定将会得到尊重，并且不会导致你的任何权益的损失。请仔细阅读该文件以决定你是否要参与此项研究。在下面点击“是的，我愿意参与这项研究”和“下一页”的选项，即表明你愿意参与此项研究。你可以将此页面保存或打印以供你做记录。如果你对于自己作为参与者

有任何问题或顾虑的话，请联系Nicole Morse, Office of Research, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

如果你不愿意参加这项调查，关闭此页面即可。
你愿意参加此项研究吗?

☐ 是的，我愿意参加此项研究。
☐ 不，我不愿意参加此项研究。

APPENDIX C

INFORMED CONSENT (ENGLISH)

UNIVERSITY of NORTHERN COLORADO

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

UNIVERSITY OF NORTHERN COLORADO

Project Title: The Relationship between Adult Attachment, Perceived Social Support and Depression in Chinese College Students with Different Life Experiences
Researcher: Yuge Guo, M.A., Department of Counseling Psychology, UNC
Research Advisor: Brian Johnson, Ph.D., Department of Counseling Psychology, UNC
Phone Number: (970)351-1645
Email: guo9411@bears.unco.edu

The purpose of this study is to investigate how important relationships in life affect the level of well-being among Chinese college students. As a participant, you will be asked to complete an online survey that includes a demographic questionnaire and four scales about your experiences with your parents, your friends, and your subjective well-being. It will take you approximately 15-20 minutes to complete the survey.

All of your responses are anonymous. Qualtrics, the Internet platform for this survey, utilizes encryption software to protect the confidentiality of your responses. These data will only be accessible to the two researchers named above. One benefit of participating in this study is that you may gain new awareness of your relationship with your parents and friends. The results of this study will be valuable in the further understanding of Chinese college students and their experiences and will lead to new ways of providing help and support to individuals in similar situations such as yourself.

You may experience mild discomfort such as anxiety as the participation in this study requires a certain degree of self-disclosure and self-reflection. However, the degree of stress is not expected to be any greater than the level of stress that is normally encountered during everyday life. Should you experience severe distress that you did not expect, please feel free to contact this researcher at the contact information above. I will provide resources for further counseling if you desire such service.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Please take your time to read and thoroughly review this document and decide whether you would like to participate in this research study. Indicating "Yes, I consent to participate in research" and clicking on the button ("Next") to continue taking the survey constitutes your voluntary consent to participate in this research study. Please keep or print this form for your records. If you have any concerns about your selection or treatment as a research participant, please contact Nicole Morse, Office of Research, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

If you do not consent to participate in this research study, simply close this window.

Do you consent to participate in this study?

☐ Yes, I consent to participate in this research study
☐ No, I do not consent to participate in this research study

APPENDIX D

DEMOGRAPHIC QUESTIONNAIRE (MANDARIN)

请填写以下背景资料。

1. 性别:
_____男
_____女

2. 年龄: _____

3. 请问你是哪个年级的大学生？
____大一
____大二
____大三
____大四

4. 请问你父母的年收入大约是？
____3 万元以下
____3 万元以上 6 万元以下
____6 万元以上 10 万元以下
____ 10 万元以上 30 万元以下
____ 30 万元以上

5. 父母的受教育程度 (请为父母分别选择最高学历)
父亲
____小学 (6 年教育)
____一些初中教育 (7-8 年教育)
____初中毕业生 (9 年教育)
____高中毕业生 (12 年教育)
____职业技术中学毕业生
____大学本科毕业生
____研究生/博士

母亲
____小学 (6 年教育)
____一些初中教育 (7-8 年教育)
____初中毕业生 (9 年教育)
____高中毕业生 (12 年教育)
____职业技术中学毕业生
____大学本科毕业生
____研究生/博士

6. 父母的婚姻状况
____已婚
____离婚
____分居

7. 你目前的交往状况:
____单身/无约会对象
____与人交往中
____已婚

8. 你有多少个兄弟姐妹？____

9. 在你 16 周岁之前，你曾经与亲生父母分开生活超过 6 个月吗？
_____是
_____否

10. 请选择以下符合你情况的选项
_____在你 16 周岁之前，父亲不在身边超过 6 个月
_____在你 16 周岁之前，母亲不在身边超过 6 个月
_____在你 16 周岁之前，父母不在身边超过 6 个月

11. 当你父母（或其中一方）不在身边的时候，是谁在照顾你？
____亲生母亲
____亲生父亲
____继母
____继父
____爷爷奶奶/外公外婆
____亲戚
____其他人

12. 你是在几岁的时候第一次与父母分开居住生活的？ ____

13. 你与父母分开生活了多久？总共分开的时间是_____ (以年计算)

14. 在和父母分开生活之后，你是否曾经和父母团聚并且在一起生活超过 6 个月 (在你 16 周岁以前)？
____是
____否

APPENDIX E

DEMOGRAPHIC QUESTIONNAIRE (ENGLISH)

Please fill out the following demographic information.

1. Gender:
_____Male _____Female

2. Age: _____

3. What is your classification in college?
____Freshman
____Sophomore
____Junior
____Senior

4. What is the annual income of your family?
____Less than 30,000 yuan
____More than 30,000 yuan, less than 60,000 yuan
____More than 60,000 yuan, less than 100,000 yuan
____More than 100,000 yuan, less than 300,000 yuan
____More than 300,000 yuan

5. Parents' education (please note highest level for each parent)
Father
____Elementary school (6 years of education)
____Some middle school (7-8 years of education)
____Middle school graduate (9 years of education)
____Some high school (10-11 years of education)
____High school graduate (12 years of education)
____Graduate of a vocational or technical school
____College/university graduate
____Graduate degree

Mother
____Elementary school (6 years of education)
____Some middle school (7-8 years of education)
____Middle school graduate (9 years of education)
____Some high school (10-11 years of education)
____High school graduate (12 years of education)
____Graduate of a vocational or technical school
____College/university graduate

____Graduate degree

6. Parents relationship status
____Married
____Divorced
____Separated

7. How many siblings do you have? ___

8. Your relationship status:
____Single
____Dating
____Married

9. Before age 16, have you ever been separated from your biological parents for more than 6 months?
_____Yes
_____No

10. If yes, what type of parental absence?
____Father-absence (more than 6 months)
____Mother-absence (more than 6 months)
____Both (more than 6 months)

11. Who took care of you when one or both of your parents were absent?
____Mother
____Father
____Stepmother
____Stepfather
____Grandparents
____Relatives
____Others

12. At what age when you were first separated from your parents? ____

13. For how long were you separated from your parents? Count the total time of separation. _____ (in years)

14. Had you ever lived with your parents for more than 6 months after separating from them for a while before age 16?
____Yes
____No

APPENDIX F

MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT (MANDARIN)

我们对你对以下陈述的同意程度很感兴趣。请参照下列量表，它们分别代表你对每一陈述的同意程度。请选择合适的选项。

1 = 非常强烈的不赞同
2 = 强烈的不赞同
3 = 一般的不赞同
4 = 不确定
5 = 一般赞同
6 = 强烈的赞同
7 = 非常强烈的赞同

1. 当我需要帮助时，总有一个特别的人出现在我身边。
2. 有一个特别的人可以同我一起分享快乐和悲伤。
3. 我的家庭总是想方设法的帮助我。
4. 我的家庭能给予我所需要的情感支持和帮助。
5. 有一个特别的人在我身边，他/她是给我安慰的源泉。
6. 我的朋友总是想方设法的帮助我。
7. 当事情不顺利时，我可以依赖朋友的帮助。
8. 我可以向我的家庭倾诉问题。
9. 我的朋友可以同我一起分享快乐和悲伤。
10. 我的生活中有一个特别的人，他/她总是考虑我的感受。
11. 我的家庭愿意帮我做决定。
12. 我可以向我的朋友倾诉问题。

APPENDIX G

MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT (ENGLISH)

We are interested in how you feel about the following statements. Using the scale below, indicate how you feel about each statement.

1 = Very Strongly Disagree
2 = Strongly Disagree
3 = Mildly Disagree
4 = Neutral
5 = Mildly Agree
6 = Strongly Agree
7 = Very Strongly Agree

1. There is a special person who is around when I am in need.
2. There is a special person with whom I can share joys and sorrows.
3. My family really tries to help me.
4. I get the emotional help & support I need from my family.
5. I have a special person who is a real source of comfort to me.
6. My friends really try to help me.
7. I can count on my friends when things go wrong.
8. I can talk about my problems with my family.
9. I have friends with whom I can share my joys and sorrows.
10. There is a special person in my life who cares about my feelings.
11. My family is willing to help me make decisions.
12. I can talk about my problems with my friends.

APPENDIX H

EXPERIENCES IN CLOSE RELATIONSHIPS-RELATIONSHIP STRUCTURES-MOTHER (MANDARIN)

这个问卷是关于你生活中的重要代表人物。请回忆你与母亲（或者最像你母亲的那个人）在一起的感受，仔细阅读下面的陈述，根据你对这些陈述的赞同情况，选择符合的选项。

1. 当我遇到问题求助于她，总能得到帮助。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

2. 我经常与她讨论我所遇到的问题以及我关心的事情。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

3. 我会与这个人商量事情。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

4. 我发现可以很容易依靠这个人。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

5. 我觉得对她开诚布公，不是一件很舒服的事。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

6. 总的来说，我不喜欢让她知道自己内心深处的感受。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

7. 我经常担心这个人并不真的在乎我。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

8. 我担心这个人会抛弃我。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

9. 我担心她不会像我关心她那样地关心我。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

APPENDIX I

EXPERIENCES IN CLOSE RELATIONSHIPS-RELATIONSHIP STRUCTURES-MOTHER (ENGLISH)

This questionnaire is designed to assess the way in which you mentally represent important people in your life. Please answer the following questions about your mother or a mother-like figure and indicate the extent to which you agree or disagree with each statement.

1. It helps to turn to this person in times of need.
strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.
strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.
strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.
strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.
strongly disagree 1 2 3 4 5 6 7 strongly agree

APPENDIX J

EXPERIENCES IN CLOSE RELATIONSHIPS-RELATIONSHIP STRUCTURES-FATHER (MANDARIN)

这个问卷是关于你生活中的重要代表人物。请回忆你与父亲（或者最像你父亲的那个人）在一起的感受，仔细阅读下面的陈述，根据你对这些陈述的赞同情况，选择符合的选项。

1. 当我遇到问题求助于他，总能得到帮助。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

2. 我经常与他讨论我所遇到的问题以及我关心的事情。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

3. 我会与这个人商量事情。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

4. 我发现可以很容易依靠这个人。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

5. 我觉得对他开诚布公，不是一件很舒服的事。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

6. 总的来说，我不喜欢让他知道自己内心深处的感受。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

7. 我经常担心这个人并不真的在乎我。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

8. 我担心这个人会抛弃我。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

9. 我担心他不会像我关心她那样地关心我。
强烈的不赞同 1 2 3 4 5 6 7 强烈的赞同

APPENDIX K

EXPERIENCES IN CLOSE RELATIONSHIPS-RELATIONSHIP STRUCTURES-FATHER (ENGLISH)

This questionnaire is designed to assess the way in which you mentally represent important people in your life. Please answer the following questions about your father or a father-like figure and indicate the extent to which you agree or disagree with each statement.

1. It helps to turn to this person in times of need.
strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.
strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.
strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.
strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.
strongly disagree 1 2 3 4 5 6 7 strongly agree

APPENDIX L

DEPRESSION-HAPPINESS SCALE (MANDARIN)

请仔细阅读以下各项陈述，并请参照下列量表，选择最符合你的选项。

0 = 从不
1 = 极少
2 = 偶尔
3 = 时常

1. 我感到悲伤。
2. 我觉得我做人失败。
3. 我对自己的生活感到不满。
4. 我觉得精神紧张。
5. 我对自己不甚满意。
6. 我觉得情绪很好。
7. 我觉得人生没有价值，活着没有意义。
8. 我对自己的生活很满意。
9. 我觉得自己很健康。
10. 我想哭。
11. 我觉得自己很成功。
12. 我觉得很快乐。
13. 我觉得我不能做决定。
14. 我觉得自己没有吸引力。
15. 我对未来持乐观的态度。
16. 我觉得人生有收获。
17. 我觉得情绪不好。
18. 我觉得人生有目标。
19. 我太累，做任何事没劲。
20. 我对自己的现状感到满意及高兴。
21. 我昏昏欲睡，精神不济。
22. 我很容易做决定。
23. 我觉得生活充满乐趣。
24. 我觉得生活没有意义。
25. 我感觉心力交瘁。

APPENDIX M

DEPRESSION-HAPPINESS SCALE (ENGLISH)

Read each item carefully. Using the scale below, please select the number that best describes you.

0 = Never
1 = Rarely
2 = Sometime
3 = Often

1. I feel sad.
2. I feel that I have failed as a person.
3. I feel dissatisfied with my life.
4. I feel mentally alert.
5. I feel disappointed with my life.
6. I feel cheerful.
7. I feel that life isn't worth living.
8. I feel satisfied with my life.
9. I feel healthy.
10. I feel like crying.
11. I feel that I have been successful.
12. I feel happy.
13. I feel that I can't make decisions.
14. I feel unattractive.
15. I feel optimistic about the future.
16. I feel that life is rewarding.
17. I feel cheerless.
18. I feel that life has a purpose.
19. I feel too tired to do anything.
20. I feel pleased with the way I am.
21. I feel lethargic.
22. I find it easy to make decisions.
23. I feel that life is enjoyable.
24. I feel that life is meaningless.
25. I feel run down.

APPENDIX N

DEBRIEFING (MANDARIN)

感谢你参与本项研究！如果你对这个研究有更深入的问题，请与研究者郭彧戈联系，邮箱地址是 guo9411@bears.unco.edu. 以下是一些关于应对抑郁的小窍门。最后还将提供大学心理咨询中心的联系方式，希望有所帮助。

与人沟通，保持联系

- 向某人倾诉
- 和朋友吃饭
- 陪伴某人看电影，参加音乐会，或者小型聚会
- 打电话或写邮件给一个老朋友

参与那些能让你开心起来的活动

- 亲近大自然
- 读一本好书
- 看一部搞笑电影或者电视剧
- 听听音乐

保持健康

- 争取每日 8 小时睡眠
- 健康饮食
- 多运动
- 多晒太阳

北方民族大学大学生心理健康教育中心
电话：0951-2066934

华侨大学心理咨询中心
电话：0595-22690651（泉州校区）
0592-6161280（厦门校区）

曲阜师范大学学生心理健康教育与咨询中心
电话：（曲阜校区）
（日照校区）

上海师范大学心理咨询与发展中心
电话： 021-57122546（奉贤校区）
021-64322544（徐汇校区）

APPENDIX O

DEBRIEFING (ENGLISH)

Thank you for participating in this study! If you have further questions about this study, feel free to contact the researcher, Yuge Guo, at guo9411@bears.unco.edu. The following are some tips for coping with depression. The contact information about university counseling centers are also provided.

Reach out and stay connected

- Talk to one person about your feelings
- Have lunch with a friend
- Accompany someone to the movies, a concert, or a small get-together
- Call or email an old friend

Do things that make you feel good

- Spend some time in nature
- Read a good book
- Watch a funny movie or TV show
- Talk to friends or family face-to-face
- Listen to music

Support your health

- Aim for eight hours of sleep
- Eat a healthy diet
- Get moving
- Get a daily dose of sunlight

North Minzu University Mental Health Education Center
Phone number: 0951-2066934

HuaQiao University Counseling Center
Phone number: 0595-22690651 (Quanzhou)
0592-6160280 (Xiamen)

Qufu Normal University Mental Health Education and Counseling Center

Shanghai Normal University Counseling and Development Center
Phone number: 021-57122546 (Fengxian)
021-64322544 (Xuhui)